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ESTABLISHED IN

ENGLAND ... 1859.
AUSTRALASIA ... 1885.

[Registered for Foreign Transmission.

Entered at Stationers' Hall.]

No. 438. VOL. XXXIII.

SEPTEMBER 8, 1888.

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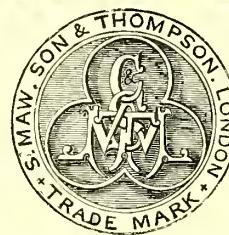
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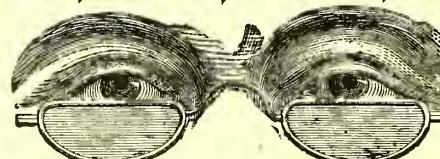
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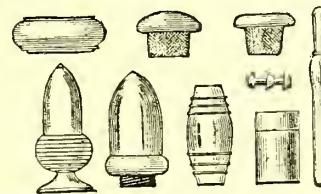
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1 cwt. pulv. zingib. Afric.; 12 lb. Maranta opt. St. Vincent; 28 lb. aloe Barb.; 17 lb. rad. curcum; 2 dozen glass stop bottles, labelled, violet glass; small stock normal glues; pair Avery's scales and weights, new; model Nordland boat; two nests drawers, painted front, glass handles. Titmas, 21 Rosamond Street, West, Manchester.

Nest of mahogany-fronted drawers, 10 ft. by 4 ft., containing 34 drawers and 6 lockers; 1 ill machine, 24/5-grain; 6-gallon carboy; shop bottles and pots; send for list; bargains Llewellyn, Chemist, Ogmore Vale, Glam.

Surplus stock.—40 lb. sponges, 4*s.* gross; 15 cwt. liquorice powder, 30*s.* cwt.; 300 lb. ecoras lemon, 3*s.* 6*d.* lb.; 200 lb. oil peppermint, various; 1 cwt. hair-oil perfume, 3*s.* 6*d.* lb.; offers wanted for $\frac{1}{2}$ cwt. gum catechu squares, 2 cwt. seed lac (poor), 8 gross penny sand balls, 3*l* gross Sand's penny dyes, 20 gall. brown tar varnish. Newhams & Pickard, Shude Lanc, Sheffield.

Plums! Plums! Plums!—Some of the finest fruit to be found in the whole plum district; 30 lbs. Pershore (yellow) plums (make preserve equal to apricot) for P.O. 4*s.* 6*d.*; 30 lbs. Victoria (red) plums for 6*s.* 6*d.*; boxes free; put in wide-mouthed bottles or jars, with 3*l* chloroform to each Oi, and tied over with bladder, will keep for an indefinite time (see *Chemist and Druggist*, 1837); as the season is advancing orders must be sent in at once. Smith, Chemist, Pershore.

WANTED.

Small dentist's outside show-case; also lathe; cash price. Ellis, Thornbury, Gloucester.

Copies of the *Chemist and Druggist* for Septemher 17, 1837. Price to 49 83.

A few cases of Murdoch's liquid food, 4*s.* 6*d.* size. Address, "Chemicus," Post Office, Chester.

Books for the Minor; must be recent editions, in good condition and cheap. Address, Harle, 675 Holloway Road, N.

Small tincture-press, in good condition; also suppository-mould. Williams, Chemist, Smethwick.

Two dozen 4 lb. blue-ointment jars, as Maw's, fig. 13; labels must be in good condition. Full particulars, Robinson, Chemist, Hull.

2-grain pill-machine, roll 36, perfect condition; Proctor's "Pharmacy," latest. Walton, Pharmacist, Sowerby Bridge, Yorks.

Shop fittings, the whole or part, in good condition. Give full particulars to R, 20 Junction Road, N.

Chemist's lamp, with fittings; must be cheap and in good condition. "Chemist," 94 Harrow Road, W.

Tooth forceps, molars lower, incisors lower, central plated; pill machine, 2-grain, make 12, good condition. Gardner, Tillicoultry.

Southall's *Materia Medica* Cabinet, complete, cheap and in good condition. F. Marris, 69 Thesiger Street, Grimsby.

Dentist's vulcaniser wanted, in good condition; Walker's preferred; state price. 7 Laly-pool Road, Birmingham.

Old gold, silver, and dental metals; full assay value given in cash or high-class mechanical work. Entwistle, Dentist, 39 Shaw Street, Liverpool.

Fifty to 500 empty castor-oil tins. Address, Bannerjee, Central Exchange News Rooms, Newcastle-on-Tyne; stating quantity and price.

Mahogany, modern, plate-glass counter-case, bent glass, six feet long; a Fourness or Wenham lamp, small size; plate-glass show shelves. Walker, Little Brighton, Birkenhead.

Wanted, in good condition, chemist's shop fixtures for double-front shop, 15 ft. by 17 ft., bottles, jars, window-fittings; send particulars, with lowest cash price. "C." 7 Granville Terrace, Harrogate.

TO AERATED WATER MANUFACTURERS

HAY'S

SOLUBLE ESSENCES

REGISTERED

ARE GUARANTEED TO BE THE FINEST IN THE MARKET.

HONOURABLE MENTION: INTERNATIONAL FOOD EXHIBITION, AGRICULTURAL HALL, LONDON, OCTOBER, 1880. GOLD MEDAL: SOCIETY OF ARTS, PARIS, 1883.

HAY'S**HOP ALE ESSENCE.**

"Supplies an excellent stomachic, appetising, and agreeable summer drink."

Brewers' Journal.

"For this Essence a brilliant future may be anticipated. It possesses characteristics very seldom to be met with."

Mineral Water Trade Review.

TRADE MARK



REGISTERED

GINGER CHAMPAGNE.

(Made from Hay's Essence.)

"An excellent and most agreeable beverage."

The Lancet.

"Mr. Hay has caught the fine aroma of ginger with remarkable success. It is equally sparkling but more refreshing than its rival, the Royal French Beverage."

*The Chemist and Druggist.***GINGER ALE.**

(Made from Hay's Fortified Essence.)

"It pours out with as fine a head as any glass of ale, and possesses all the fine aromatic flavour of the pure ginger."

*The Chemist and Druggist.***HAY'S HOP ALE.**

"This is an excellent Non-Alcoholic beverage."

The Lancet.

"Evolves a delicious aroma of Hops."—*Medical Press.*

HAY'S SOLUBLE ESSENCE OF JAMAICA GINGER. A Pure Essence of the Finest Ginger.

Trade Price, 5s. per lb.; 12 lbs. and upwards, 4s. 6d.

HAY'S COMPOUND FORTIFIED ESSENCE OF JAMAICA GINGER. FOR FIRST QUALITY GINGER ALE.

Imparts an exquisite Ginger Aroma. Trade Price, 5s. 6d. per lb.; 12 lbs. and upwards, 5s. Quantity required, five fluid ozs. to each gallon of Syrup, making 106 10-oz. bottles.

HAY'S GINGER ALE EXTRACT. FOR SECOND QUALITY GINGER ALE. Imparts Pungency, Colouring, great Brilliance, and an unusually Fine Ginger Flavour and Aroma. Trade Price, 4s. 6d. per lb.; 12 lbs. and upwards, 4s. Quantity required, three fluid ozs. to each gallon of Syrup, making 106 10-oz. Bottles.**HAY'S GINGER ALE ESSENCE.** Highly Concentrated. FOR THIRD QUALITY GINGER ALE.

This Essence makes a Ginger Ale that is unsurpassed by the so-called finest Belfast. Trade Price, 9s. per lb.; 12 lbs. and upwards, 8s. 6d. Quantity required, half a fluid oz. to each gallon of Syrup, making 106 10-oz. Bottles.

HAY'S GINGER CHAMPAGNE ESSENCE. This Essence is a combination of the finest flavours, and imparts with the Ginger a most exquisite aroma. Trade Price, 8s. per lb.; 12 lbs. and upwards, 7s. 6d.**HAY'S SOLUBLE ESSENCE OF MESSINA LEMONS.**

No. 1. Highly Concentrated. Trade Price, 8s. 6d. per lb.; 12 lbs. and upwards, 8s. Quantity required, three-quarters fluid ounce to each gallon of Syrup, making 106 10-oz. bottles.

HAY'S SOLUBLE ESSENCE OF MESSINA LEMONS.

No. 2. A magnificent preparation. Makes an exquisitely fine Lemonade. Trade Price, 6s. 6d. per lb.; 12 lbs. and upwards, 6s. Quantity required, one fluid ounce to each gallon of Syrup, making 106 10-oz. bottles.

HAY'S LEMON FLAVOUR. No. 1. An Exceptionally Fine Essence, makes a delicious Lemonade, to which it imparts all the Fine Aroma and Flavour of the choicest Lemons. Trade Price, 5s. per lb.; 12 lbs. and upwards, 4s. 6d. Quantity required, one fluid ounce to each gallon of Syrup, making 106 10-oz. Bottles.**HAY'S LEMON FLAVOUR.**

No. 2. A very fine Essence, prepared from the fresh fruit. Trade Price, 4s. 6d. per lb.; 12 lbs. and upwards, 4s. Quantity required, one-and-a-quarter fluid ounce to each gallon of Syrup, making 106 10-oz. Bottles.

HAY'S HOP ALE ESSENCE.

This Essence is made from the Choicest Hops grown, and is unrivalled for its peculiarly fine Hop flavour and aroma. Hop Ale made from this Essence has the full flavour of the finest Hops, and is a really appetising Bitter Beer. Trade price, 8s. 6d. per lb.; 12 lbs. and upwards, 8s. Quantity required, two fluid ozs. to each gallon of Syrup, making 106 10-oz. Bottles.

For Orange, Vanilla, and all other Essences send for Price List.

[2]

The difference between preparations made from HAY'S ESSENCES and those made from the numerous SPURIOUS IMITATIONS of them bearing the name of SOLUBLE ESSENCES is most marked, and no manufacturer using the latter can compete with one using HAY'S PREPARATIONS, as is universally known.

Indentors, to prevent disappointment, should specify that the Goods are to be of HAY'S MANUFACTURE.

MANUFACTURING CHEMIST,
BEVERLEY ROAD,
ENGLAND.

"PREMIER BRAND" ESSENTIAL OILS.

Concentrated Fruit Essences—Soluble
MANUFACTURED BY
JOHN CUMMOCK

Who has received Hundreds of Unsolicited Testimonials, also THREE GOLD MEDALS, besides other Honours.

Chemists manufacturing their own Aërated Drinks should write for Prices and Samples of the following:—

ESSENCE "SPARKLING LIMETTA"—Soluble "Essence of Lemon"
ESSENCE "LEMON SQUASH"—Essence for Sherbet
ESSENCE "TONIC HEADING"—Essence for Ginger Ale
AND COMPARE WITH OTHER MAKERS.

Manufactory & Offices: 45 ROPE WORK LANE, GLASGOW.
LATE 32 MAIN STREET.

TEMPERANCE BEVERAGES.

A Sixpenny Bottle of

ADAMS'S EXTRACT OF HERBS

Will make 8 gallons of sparkling, wholesome, and refreshing

PRIME HERB OR BOTANIC BEER,

Unequalled in strength and richness of flavour by any preparation made from fresh herbs.

The Extract is very carefully manufactured, on the most improved scientific principles, from the herbs and plants gathered and dried at the proper season, when their virtues are in full vigour, thus retaining their invigorating and health-giving properties.

It makes an excellent beverage, giving natural flavour and colour, and a sparkling foam like bottled ale.

In Bottles, 6d. to make 8 gals.; 1s. to make 18 gals.; and 2s. 6d. to make 50 gals.

ADAMS'S GINGER ALE ESSENCE

makes a sparkling, refreshing, and invigorating beverage for summer and winter.

ADAMS'S SPARKLING FOAM PRODUCER.

One tablespoonful added to 2 gallons of the Herb Beer or Ginger Ale, just before bottling, gives a creamy foam like bottled ale.

Wholesale Agents,

W. EDWARDS & SONS, Queen Victoria St., London.

Specially favourable terms to large Buyers from the
PROPRIETOR,

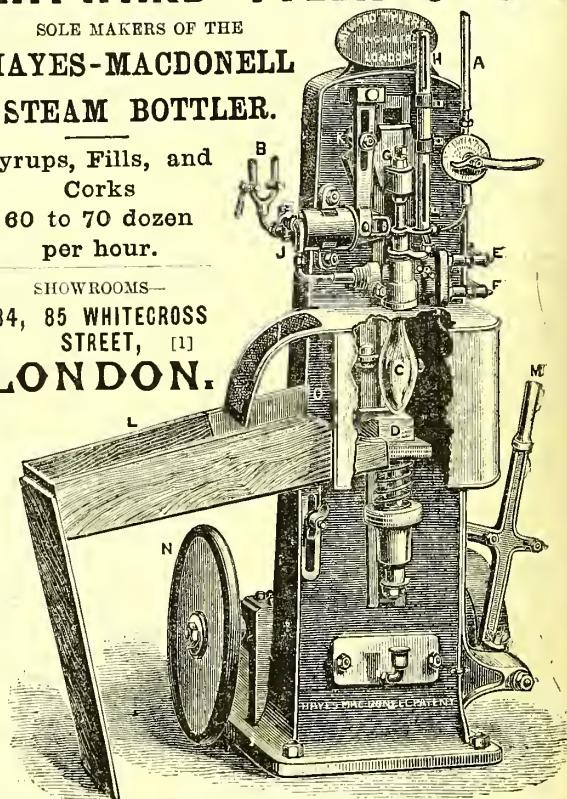
B. ADAMS, Mansfield, Notts.

HAYWARD TYLER & CO.

SOLE MAKERS OF THE
HAYES-MACDONELL
STEAM BOTTLER.

Syrups, Fills, and
Corks
60 to 70 dozen
per hour.

SHOWROOMS—
84, 85 WHITECROSS
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LONDON.



The Chemists Aerated & Mineral Waters Association. Limited London :: Harrogate :: Bristol ::

THE CHEMIST'S TRUE FRIEND.

Established in 1878 to supply Chemists ONLY with the Highest Quality of Aerated Waters at the Lowest Co-operative Prices.

Received with doubt, it worked its way uphill to success, and now fills more Syphons than any Maker in the United Kingdom.

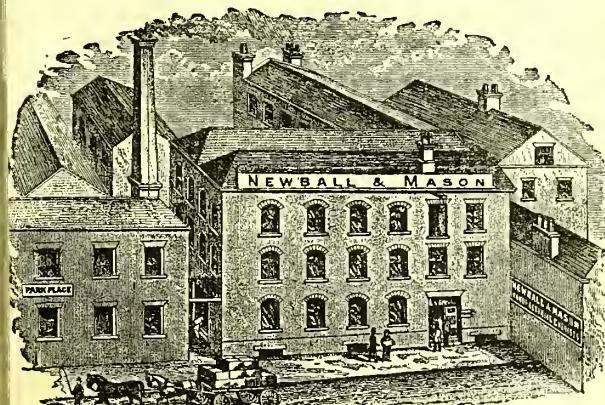
Number of Members, about 1,800. Last Dividend, $7\frac{1}{2}$ per cent.

SECURE A SHARE WITHOUT DELAY.

Write—Secretary, 45 Gifford St., Caledonian Road, London, N., for Samples, Prices, &c.

NON-INTOXICATING BEER

PRODUCED AT A SMALL COST AND LITTLE TROUBLE.
ONE TABLESPOONFUL MAKES A GALLON.



BEWARE OF MEAN & FRAUDULENT IMITATIONS.
BEWARE OF OTHERS COPYING our Handbills and Labels.
BEWARE OF CHEAP FOREIGN PRODUCE.

MASON'S IS A SPECIAL COMPOUND
AND THE ORIGINAL PREPARATION.

ALL OTHERS ARE IMITATIONS.

Told in Bottles, 6d., 1s., 2s., 5s., and 20s. each.
Is not Affected by Climate or Weather.

MASON'S ORIGINAL

EXTRACT OR
ESSENCE **OF HERBS**

(REGISTERED).

Composed of Yarrow, Dandelion, Comfrey, & Horehound.

FOR THE SPEEDY PRODUCTION OF

HERB OR BOTANIC BEER.

This invaluable preparation is carefully compounded from the above well-known Herbs. Notwithstanding so many imitations got up to resemble the original, it stands unrivalled for the production of a most delicious, wholesome, and non-intoxicating beverage, full of body and flavour, and a rich creamy head like bottled ale.

INVENTORS AND MANUFACTURERS—

NEWBALL & MASON, Chemists,
Park Place, NOTTINGHAM.

WHOLESALE AGENTS.—LONDON—Sanger & Sons, Lynch & Co., Barclay & Sons, Edwards & Sons, Newbery & Sons, Hovenden & Son, Sutton & Co., LIVERPOOL—Evans, Sons & Co.; Jno. Thompson, LEEDS—Goodall, Backhouse & Co.

COLONIAL AGENTS WANTED.

Prices, Circulars, Show Cards, &c., on application.

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SPARKLING TABLE WATERS,

UNRIVALLED FOR PURITY AND QUALITY.

SODA WATER.

SELTZER WATER.

POTASH WATER.

LITHIA WATER.

SIMPLE
AERATED WATER.



LEMONADE.

GINGER ALE.

QUININE TONIC.

GINGER BEER.

HOREHOUND BEER.

EXTRACTS FROM ANALYTICAL REPORTS.

"The examination of the Waters which I have made has satisfied me that they have been prepared with the greatest care, and are of excellent quality."

FRANCIS JONES, F.R.S.E., F.C.S.

"On the whole, I have no hesitation in stating that your Aerated Waters are of the highest standard of purity which is practically attainable."

LOUIS SIRBOLD, F.I.C., F.C.S.

J. & B.'s Syphons are mounted with PURE BLOCK TIN, thus ensuring absolute immunity from dangerous metallic contamination.

113 MARKET STREET, and 44 DOWNING STREET, MANCHESTER.

PRIZE MEDAL



ESTABLISHED 1812.



HEALTH
EXHIBITION.

POTTER & CLARKE,

Registered Trade Mark.

WHOLESALE AND EXPORT BOTANIC DRUGGISTS,

75 WESTON STREET, LONDON, S.E.

SPECIALITIES—

POTTER'S HERB BEER EXTRACT

For the production of a splendid Botanic Beer, with a good colour, flavour, and body, and a creamy head like bottled ale. The demand for this article last year was exceedingly large, and the demand this year bids fair to be still larger. All Chemists will find it a profitable article of sale.

Price 10d. per lb. Special quotations for quantity. In 6d. Bottles, 3/6 per dozen.

Supplies of printed matter sent with all 6d. Bottles. Will keep good in any climate.

FLUID EXTRACTS. NEW REMEDIES. MEDICINAL HERBS IN PACKETS.

Special Agents for Messrs. Parke, Davis & Co.'s Fluid Extracts, Concentrations, Pressed Herbs, &c.

Price Lists on application. Telegraphic Address—"HOREHOUND, LONDON."

FOREIGN INDENTS RECEIVE OUR SPECIAL ATTENTION.

TELEPHONE NO. 7522.

TELEGRAPHIC ADDRESS—"IDRIS KENTISH TOWN."

IDRIS & CO.

Pure Mineral Water Manufacturers,
ASCHAM STREET, LONDON, N.W.

IDRIS & CO. are at all times prepared to offer the same terms, and *greater advantages* than, any of the so-called Co-operative Associations. Their Mineral Waters are now supplied to a much greater extent and *more exclusively* to Chemists and Hospitals than those of any other Mineral Water firm or Association in London.

Being Chemists, they are practically acquainted with the requirements of the trade, and give their *personal attention* to every detail connected with their business.

Write for terms and compare prices, INCLUDING delivery.

PURE LIME JUICE ("IDRIS" BRAND).

THIS Juice is the first CLEAR pressings of SELECTED FRUIT in specially-designed wooden presses, prepared according to our instructions, at the "Wall House Estate," Dominica, B.W.I., and will be found of a delicious fruity flavour, without the slightest mustiness or bitterness, and fully 25 per cent. stronger in Citric Acid than the usual brands of Lime Juice.

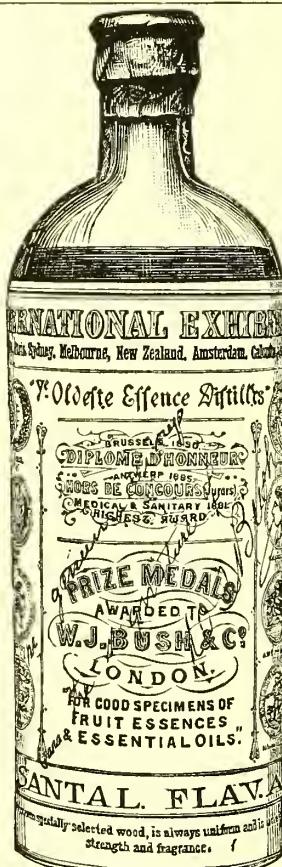
Samples sent free, with quotations for quantities and regular supplies.

IDRIS & COMPANY,
Sole Importers and Agents,
ASCHAM STREET, LONDON, N.W.

W. J. BUSH & CO.'S PHARMACOPŒIA ESSENTIAL OILS.

Packed in Original 1-lb. Bottles.

- 01. Anisi Ang.
- 01. Amygd. Essent. Ang.
- 01. Anethi Ang.
- 01. Anthemid. Ang.
- 01. Carui Ang.
- 01. Caryoph. Ang.
- 01. Cinnam. Ver. Ang.
- 01. Copaibæ Ang.
- 01. Coriand. Ang.
- 01. Cubebæ Ang.
- 01. Juniperi Ang.
- 01. Menthæ Pip. Ang.



- 01. Myristicæ Ang.
- 01. Pimentæ Ang.
- 01. Santal. Flav. Ang.

ALL OWN DRAWING.

- 01. Bergamot, Extra
- 01. Eucalypti, Extra
- 01. Lavand. Flor., Extra
- 01. Limonis, Extra
- 01. Rosmar., Extra

DIRECT IMPORTATION.

Specially Selected.

It is imperative that Chemists and others requiring Essential Oils for medicinal purposes should purchase genuine and finest qualities only. These can only be obtained from W. J. BUSH & CO., who supply them as above, in 1-lb. Bottles, and guarantee their quality and purity. *Nearly all Essential Oils offered in the Market are impure.*

W. J. BUSH & CO.,
[1]
MANUFACTURING CHEMISTS, DRAWERS OF ENGLISH ESSENTIAL OILS,
ARTILLERY LANE, LONDON. Works—ASH GROVE, HACKNEY.

REPORT

ON

COLEMAN'S LIEBIG'S EXTRACT
OF
MEAT AND MALT WINE,By FRANCIS SUTTON, Esq., F.C.S.,
Public Analyst for the County of Norfolk, &c.FRANCIS SUTTON, ESQ., F.C.S.,
Analytical and Consulting Chemist,
Author of *Handbook of Volumetric Analysis*,
Chemist to the Norfolk Chamber of
Agriculture, Gas Examiner for the City of Norwich.NORFOLK COUNTY ANALYSTS
OFFICE,
LONDON STREET, NORWICH,

July 25th, 1888.

I hereby certify that I have made an exhaustive analysis of the Meat and Malt Wine prepared by Messrs. Coleman & Co., Limited, Norwich, with a view to determine chiefly whether it really contains an appreciable quantity of Meat Extract, and whether it is entitled to be classed as a suitable dietetic stimulant for invalids. The result of my analysis proves that it does contain a suitable proportion of all the most valuable principles contained in Liebig's Extract of Meat. It is well known to physiologists that this extract is not valued for the ordinary albumenoids (such as gelatine and albumen), which are, indeed, excluded to a large extent by the process of manufacture, but that its chief value, as shown by Baron Liebig himself, consists in its containing those essential principles peculiar to flesh, and which have a remarkable restorative power over the nervous system of invalids, thus rendering Liebig's Extract famous. In addition to these valuable substances the wine also contains a considerable quantity of Malt Extract, which is also well known and appreciated as an excellent restorative in cases of debility.

In addition to this the wine is of pure, natural quality, free from sophistication.

As witness my hand,
(Signed) FRANCIS SUTTON,
Public Analyst for the County of Norfolk, &c.

TRADE PRICES ON APPLICATION TO

COLEMAN & CO., LIM., NORWICH & LONDON.

VALUABLE & INTERESTING TO EVERYBODY.
COMPRESSED HOPS.

Best Hops compressed into small parcels of one pound and half-pounds, and sent out in cases containing 30 lbs. each. These Hops are specially selected and compressed for keeping purposes, and will retain their aromatic strength for a considerable time.

They are introduced to the Public to enable them to make their own BITTERS, YEAST, HOME BREWING and numerous other purposes. Full particulars given on each packet.

P.S.—Chemists will naturally see the great advantage in making their own Bitters from the Pure Hop itself.

Specially packed by A. WILKINSON & SONS, 27 Derby Lane, Old Swan, LIVERPOOL.

SAMPLES AND QUOTATIONS ON APPLICATION.

sole Agents for Chemists—EVANS, SONS & CO., Liverpool; EVANS, LESCHER & WEBB, London; EVANS, SONS & MASON, Lim., Montreal.

PUMILINE.

FOR GOUT, RHEUMATISM, SORE THROAT, CHEST AFFECTIONS.

SIR MORELL MACKENZIE wrote, December 9, 1887:—"I have much pleasure in stating that I have made Oleum Pumilioris during the last twenty-five years, that I consider it a most valuable preparation. It acts as admirable tonic to the mucous membrane of the air passages in cases of chronic bronchitis and laryngeal catarrh. I am glad, therefore, to hear that the remedy is about to be used on a large scale, and I have no doubt the results will be highly satisfactory.

(Signed)

"MORELL MACKENZIE, M.D."

THE ONLY PURE ESSENCE AND
EXTRACT OF SNOW-GROWN
PUMILIO PINES.

THE SNOW-GROWN PINUS PUMILIO.

PUMILINE ALONE, with the single exception of Pinol, possesses the physical and chemical properties which give it the faculty of being administered internally with SAFETY. It is, therefore, essential for Chemists to use Pumiline, as it is the only preparation obtained from snow-grown Pumilio Pines.

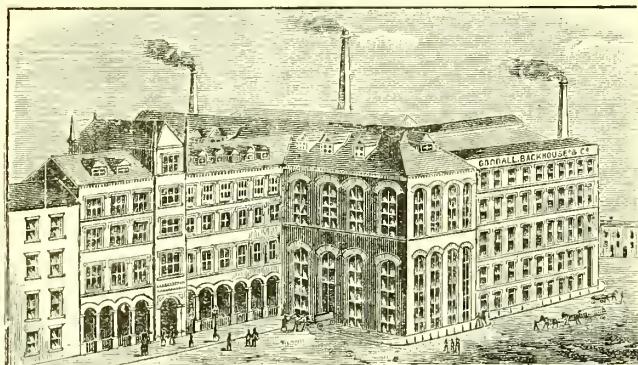
FOR TRADE PRICE LISTS, PAMPHLETS, ANALYTICAL REPORTS, &c.—

G. & G. STERN, 11 Billiter Square, LONDON, E.C.

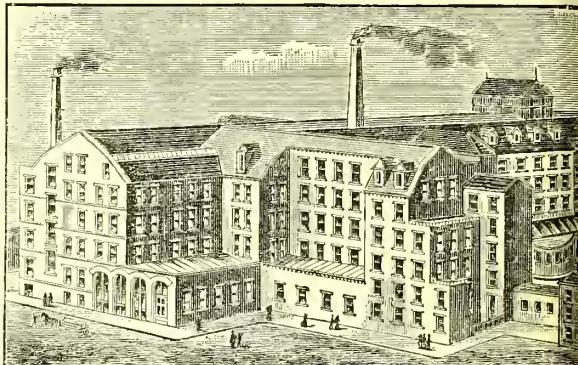
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PREMISES AT LEEDS,

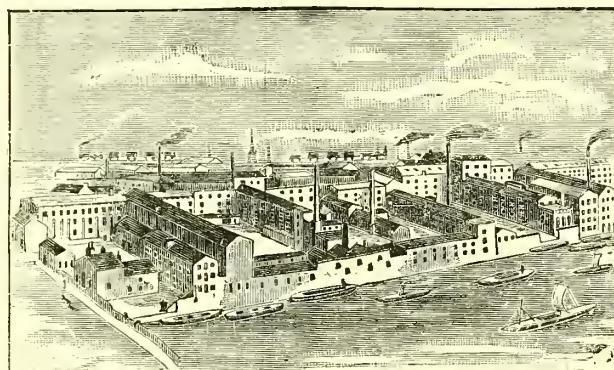
CONTAINING A FLOOR AREA OF EIGHT ACRES.



Warehouse and Offices, White Horse Street—West View.



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Manufactory, Sovereign Street. Frontage 1,048 feet.



GOODALL'S HOUSEHOLD SPECIALITIES.

YORKSHIRE RELISH,

MOST DELICIOUS SAUCE IN THE WORLD.
In Bottles, 6d., 1s., and 2s. each.

GOODALL'S BAKING POWDER,

THE BEST IN THE WORLD.
1d. Packets; 6d., 1s., 2s., and 5s. Tins.

GOODALL'S EGG POWDER,

ONE 6d. TIN IS EQUAL TO 25 EGGS.
In 1d. Packets; 6d., 1s., 2s., and 5s. Tins.

GOODALL'S CUSTARD POWDER,

DELICIOUS CUSTARDS WITHOUT EGGS.
In Boxes, 2d., 6d., and 1s. each.

GOODALL'S QUININE WINE, B.P.

BEST TONIC YET INTRODUCED.
Bottles, 6d., 1s., and 2s. each.

GOODALL'S BLANCMANGE POWDER,

DELICIOUS BLANCMANGE IN A FEW MINUTES. In Boxes, 6d. and 1s. each.

Proprietors—**GOODALL, BACKHOUSE & CO., LEEDS.**

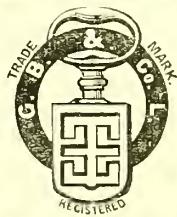
PATENT MEDICINES AND GROCERS' SUNDRIES.

Monthly Price List of Patent Medicines, Grocers' Sundries, &c., will be sent post-free on application to
GOODALL, BACKHOUSE & CO., LEEDS.

GOODALL, BACKHOUSE & CO.

WHOLESALE & EXPORT DRUGGISTS,

Druggists' Sundrymen, Patent Medicine Dealers,
Drug and Spice Grinders, Distillers and Drysalters.



MANUFACTURING & ANALYTICAL CHEMISTS,

IMPORTERS OF

Olive Oil, Castor Oil, Cod-liver Oil, Essence of Lemon, Cream of Tartar, Bees Wax, Dalmatian Insect Flowers, &c., &c.

SPECIAL MANUFACTURES—

Acetate of Amyl.	Decoctions, Infusions, & Liquid	Potass. Bromid.
„ of Lead.	Extracts (concentrated in vacuo).	Salts of Lemon.
Acetic Ether.	Ferri Iodid.	Sodii Bromid.
Alcohol, Absolute.	„ Sulph., Pure.	Spt. Æther. Nit.
Ammon. Bromid.	Lac Sulph.	„ Ammon. Co.
Barium Chloride.	Orange Quinine Wine, B.P.	Sulphur Præcip., B.P.
„ Nitrate.	Phosphate of Soda.	Syrup Rhœados.
Citrate of Iron and Quinine.	Phosphoric Acid.	Terebene.
„ of Potash.	Potass. Iodid.	Verdigris.

AND ALL PHARMACEUTICAL PREPARATIONS.

CITRATE OF MAGNESIA AND LEMON KALI.

HERB BEER EXTRACT AND COMPOSITION ESSENCE.

MAKERS OF ALL KINDS OF

PLAIN ROUND, SQUARE, AND OBLONG TINS.

PROPRIETORS AND SOLE MANUFACTURERS OF

GOODALL'S HOUSEHOLD SPECIALITIES,

KAYBERRY'S LUMBAGO PILLS,

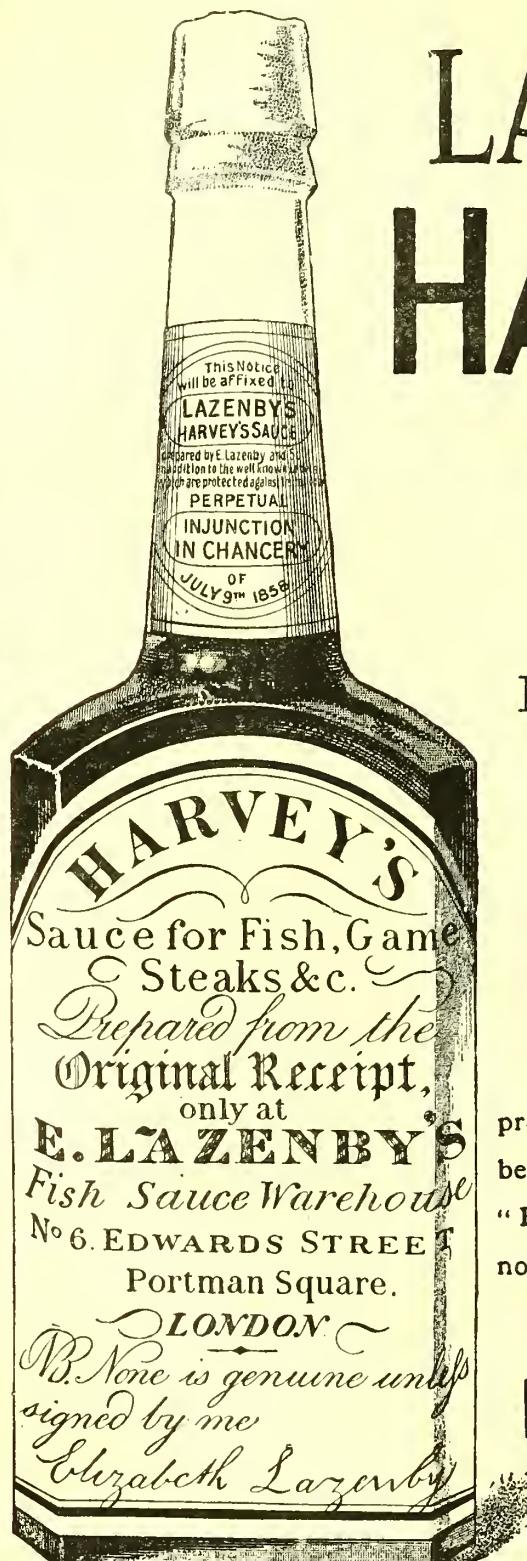
AND

FREEMAN'S SYRUP OF PHOSPHORUS.

DETAILED PRICE LIST ON APPLICATION.

GOODALL, BACKHOUSE & CO., LEEDS.

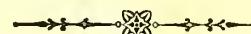
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LAZENBY'S HARVEY'S SAUCE

FOR
FISH, GAME, STEAKS,
&c.

In use for now nearly
a century.



CAUTION.

Each bottle of the celebrated Sauce prepared from the ORIGINAL RECIPE bears the well-known Label signed "Elizabeth Lazenby," without which none can be genuine.



E. LAZENBY & SON,
18 Trinity Street,
LONDON. S.E.

MIXED PICKLES

PREPARED BY
E. LAZENBY & SON
(EDWARDS STREET, PORTMAN SQUARE)
18 TRINITY STREET
LONDON, S.E.

HARVEY'S SAUCE. — CAUTION. — The admirers of this celebrated Sauce are particularly requested to observe that each bottle bears the well-known label signed "ELIZABETH LAZENBY"; this label is protected by perpetual injunction in Chancery of the 9th July 1858 and without it none can be genuine.

Elizabeth Lazenby

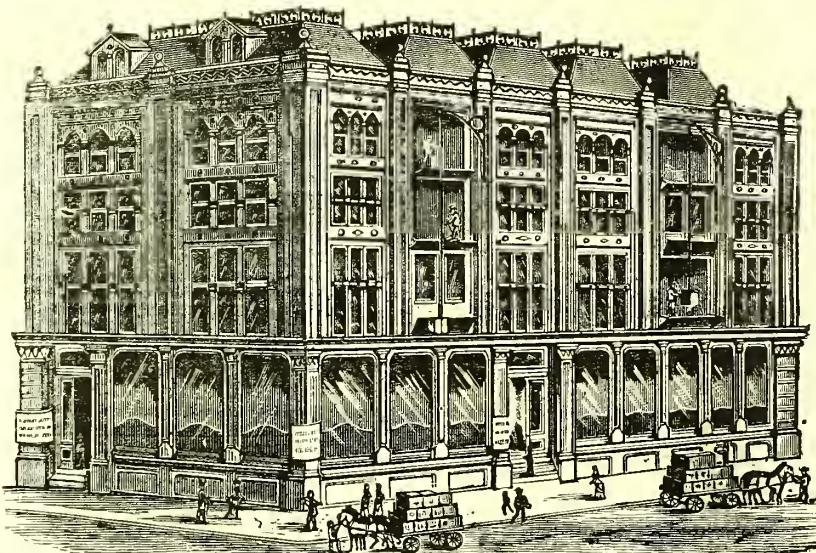
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E. LAZENBY & SON, LONDON.

HESELTINE'S

THE PREMIER TEA OF INDIA AND
CEYLON, IS THEIR SPECIAL IMPORTATION
AND THE PERFECTION OF TEA.

REGISTERED

“TAPRABUNDA” TRADE MARK.



OFFICES AND DUTY PAID WAREHOUSES.

For Retail at 1s. 8d., 2s., and 2s. 6d.

In Lead Packets, $\frac{1}{4}$ lb., $\frac{1}{2}$ lb., and 1 lb.

Terms of Agency, and Samples of the Tea, on application.

WM. HESELTINE & SON,

56 Wilson Street, and 1 & 3 Earl Street, Finsbury,
LONDON, E.C.

AGENTS WANTED WHERE NOT ALREADY REPRESENTED.

Telegraphic Address—“TAPRABUNDA LONDON.”

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COMFORT & PROLONG YOUR EXISTENCE

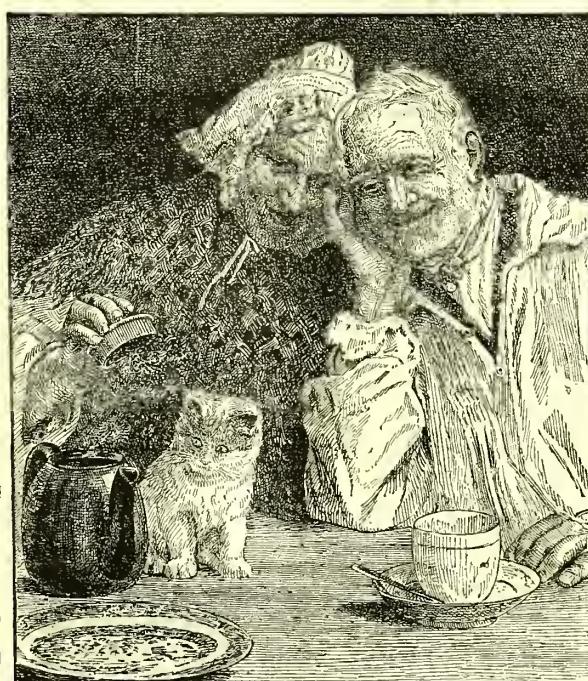
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TEA.



TRADE MARK.

	s. d.
itre "Broken Leaf"	1 4
itre "Broken Am.	
Pekoe"	1 8
itre "Thrift" (whole leaf)	1 8
itre "Kee-Mun" ...	2 0
itre "Amgoorie" ...	2 6



Fac-Simile of Show Card distributed Gratis to all Agents.

MITRE
TEA.



TRADE MARK.

	s. d.
Mitre "Broken Leaf"	1 4
Mitre "Breken Am.	
Pekoe"	1 8
Mitre "Thrift" (whole leaf)	1 8
Mitre "Kee-Mun" ...	2 0
Mitre "Amgoorie" ...	2 6

Specially Selected Agents. Wrapped in $\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., & 1-lb. Parcels.

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Plated Show Cards, Enamelled Iron Tablets, Posters, Window Transfer, and Handbills with Agent's Name on supplied free. Newspaper and Railway Station Advertisements to suit the requirements of Agents. Applications for Agencies where unrepresented will receive prompt attention. Price Current and Pamphlet, with Terms, post free.

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Packed in New Patent Air-tight Circular Boxes. Most Novel and Attractive Package.

In $\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., and 1-lb. Boxes, to sell Retail at 2/-, 2/6, and 3/- per lb. Set of three $\frac{1}{4}$ -lb. samples post free for 2/- in stamps

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CAVE, JOHNSON & CO., WHOLESALE TEA AND COFFEE DEALERS. 8 LIME ST., LONDON, E.C.

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21 MINCING LANE, LONDON,

Are prepared to entertain a limited number of applications from Traders of undoubted standing to be appointed Agents or the sale of the Company's Teas. A Liberal Commission will be allowed. The Agency will be found to be a valuable one, entailing little, if any, trouble to the Agent, in addition to which it will be the means of bringing numerous customers to him, who will patronise his general business.

Address the Secretary—**UNITED KINGDOM TEA COMPANY, LIMITED,**

Offices—21 MINCING LANE, LONDON, E.C.

PEARSE & WHEATLEY, 42 MINCING LANE, LONDON

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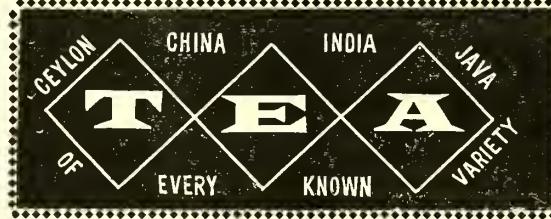
WHOLESALE DEALERS & EXPORTERS OF TEA, COFFEE, ETC.

SUPPLY AT LOWEST MARKET RATES EITHER FOR HOME CONSUMPTION OR EXPORT.

In original Boxes, Half Chests, or Chests, as imported.

Duty Paid or under Bond.

Prices and Samples on application.



Or in Leaden or Foil Packets ($\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., 1-lb., &c.),

Or in kilos., $\frac{1}{2}$ kilos., or fractional parts, for countries using these weights.

Fancy Tin Boxes any size or weight.

SPECIAL BLENDS OF TEA (Duty-paid prices quoted).

No. A.	No. T.	No. 1.	No. 2.	No. 2a.	No. 3.	No. 3a.	No. 4.	No. 4a.	No. 5.	No. 5a.	No. 6.	X.	2/4
10d.	11d.	1/	1/2	1/3	1/4	1/5	1/6	1/7	1/9	1/10	2/		

In Boxes, 20 lbs. or 40 lbs.; $\frac{1}{2}$ -Chests, 60 lbs.; or Chests, 100 lbs. 60 lbs. carriage paid to any Station in England or Wales. Terms—Net Cash with order.

CEYLON TEAS (PURE)— IN LEAD PACKAGES ($\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., or 1-lb.) Most attractively labelled.

Export Department.—Teas or Coffees in Bond. Shipped to any part of the world. Terms, f.o.b. London; against banker's credit or remittance. Samples, Price Current, and every information on application.

RAW COFFEES (Duty 14s. cwt.).
Rio, Santos, Costa Rica, Mocha, East India, Mysore, Naidooobatum, Jamaica, Porto Rico, Ceylon, Guatemala, Manila, Java, &c.



ROASTED COFFEES (Duty Paid).

10 $\frac{1}{2}$ lb., 1/, 1/1, 1/2, 1/3, 1/4; Mocha, 1/5. In Bags, 28 lbs., 56 lbs., or 112 lbs. net. Bags free. Also supplied Ground in 7 lb., 14-lb., 28-lb., or 56-lb. tins.

THE NEW FRENCH COFFEE—CAFE FRANCAIS to sell at 10d., 1/, 1/4, and 1/6, in $\frac{1}{4}$ -lb., $\frac{1}{2}$ -lb., and 1-lb. Canisters. Most tastefully labelled, without any firm's name appearing.

MILK IN POWDER

PREPARED BY THE SWISS MILK CO., ST. GALL, SWITZERLAND.

UNSWEETENED OR SWEETENED.

The cheapest, purest, and most nutritious of all similar productions.

The Lancet says:—A very interesting and valuable preparation.

British Medical says:—The preparation represents the highest possible degree of concentration which can be obtained, and is sure to be appreciated.

The Medical Press says:—A milk which is with difficulty distinguished from fresh cow's milk.

CARL LAWINSKI, 50 Mark Lane, LONDON, E.C.

ENGLISH CONDENSED MILK.

ESSEX AND PRIORY BRANDS.

Pure Home-produced British Milk. This Milk is under strict daily analyses and free from all possible contamination, and is the Best Food for Infants, &c.
Letter & Telegraphic Address—“COUNTIES COLCHESTER.”

ROBERT GIBSON & SONS,
MANUFACTURERS OF HIGH-CLASS LOZENGES OF EVERY DESCRIPTION,

JUJUBES, BOILED SUGARS, COMPRESSED PELLETS, &c., &c.

Shipped through London Houses to all parts of the World. Price Lists sent on application to the Works,
ERSKINE STREET, HULME, MANCHESTER, ENGLAND.
LONDON DEPOT—1 AUSTRALIAN AVENUE.

LIQUID PEPTONATE OF IRON (STERILIZED)

The best remedy for Anæmia and in all cases where the stomach cannot bear iron in the ordinary forms. A wonderful stimulant to nutrition.

COLOURLESS PEPTONE OF MEAT (STERILIZED)

The only rational Peptone, free from microbes. Antibacteridian sterilization insures its complete preservation.

SAMPLES FREE TO MEDICAL MEN AND CHEMISTS ON APPLICATION.

Sole Makers: DENAEYER'S PEPTONES COMPANY, LIMITED, 118 Bishopsgate St. Within, LONDON, E.C.



BOVRIL

“RAMORNIE.”

LIEBIG'S

As supplied to the War Office.

500 GUINEAS

will be paid to any charitable object if it can be shown that one ounce of the nutritious constituents of BOVRIL does not contain more real and direct nourishment than 50 ounces of Liebig's or any similar Meat Extract, Bouillon, or Beef Tea. — JOHN L. JOHNSTON, Proprietor, 30 Farringdon Street, London.

Extract of Meat.

1-lb. Jars	per lb.	6/2	per doz.	74/0	2-oz. Jars	per lb.	7/0	per doz.	10/6
½-lb. Jars	per lb.	6/4	per doz.	98/0	1-oz. Jars	per lb.	7/8	per doz.	5/6
4 oz. Jars	per lb.	6/7	per doz.	19/0	½-oz. Jars	per lb.	8/0	per doz.	3/0

Write for Detailed Price List to the Australian Meat Co., 9 and 11 Fenchurch Avenue, E.C.

6 lbs. Carriage Free.

TO AGRICULTURAL CHEMISTS.

HAYWARD'S POWDER SHEEP DIP

Kills Ticks, Lice, &c., Cures Scab, and Prevents Maggot Fly Striking.

MIXES INSTANTLY WITH COLD WATER.

COSTS ABOUT A HALFPENNY PER SHEEP.

This preparation has been thoroughly tested both at home and in the Colonies, and has proved highly satisfactory. It does not leave any sediment when mixing, and is perfectly safe in use. In attractive yellow packets; neither the Powder or wrapper is affected by age, and there is no fear of the packet bursting. In various sizes.

TERMS, PRICE LIST, AND FULL PARTICULARS ON APPLICATION.

NOTE.—We are desirous of making Special Arrangements with Chemists as to Agencies Special Labels, Advertising, &c., and we invite Correspondence. A Sample Packet post free.

HAYWARD'S FLY POWDER

FREE FROM POISON.

EFFECTUALLY KEEPS OFF THE MAGGOT FLY.

In Packets, 6d., for 12 to 15 Sheep.

In Perforated Tins, 1s. 3d., for 25 to 30 Sheep.

SAMPLE, PRICES, &c., ON APPLICATION.

We also supply this with the Chemist's own name on Packets, or in Bulk.

Tomlinson & Hayward,

MANUFACTURING CHEMISTS,

Estab. 45 Years.] **LINCOLN.** [Estab. 45 Years.

Telephone Number, 1852.

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DITTO PLANT (See SYRUPS and ESSENCES.) Barnett and Foster Brathy and Hincliffe Ensh, W. J., and Co. (Foam Producer, &c.) Farver, H. Guest Frères Tyler, Hayward, and Co.

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Bait G. L., F.C.S.

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May and Baker White A., and Sons

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Beedzler, J., and Co.

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James, Dr. Prosser

Keens and Ashwell

Lewis, H. K.

Loisette, Professor

Pritchett, W. E.

Wells, G.

Wright, J., and Co.

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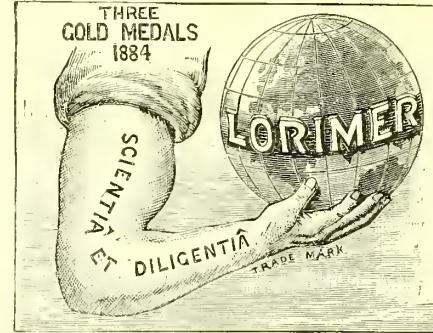
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JURY lists are attached to church and chapel doors on the first three Sundays in September. Pharmaceutical chemists and registered dentists who desire to secure their exemption from jury service during the coming year should examine these lists, and if their names appear on them should make prompt objection.

MR. F. W. BRIDGES, one of the publishers of *The Chemist and Druggist of Australasia*, will make a tour through the United States, from San Francisco to New York, in the autumn. He will be glad to call on American firms *en route* who wish to talk with him concerning the drug business in the Australasian colonies, and those who wish to have an interview with him should address letters to the care of Messrs. John Taylor & Co., 112 to 120 Pine Street, San Francisco Cal., or to the care of Mr. C. F. A. Hinrichs, 29 Park Place, New York.

LONDON DRUG STATISTICS.

THE following figures refer to the stocks of the principal drugs in the Port of London on August 31, 1888, and to the imports and deliveries from January 1 to August 31, as compared with the preceding year:-

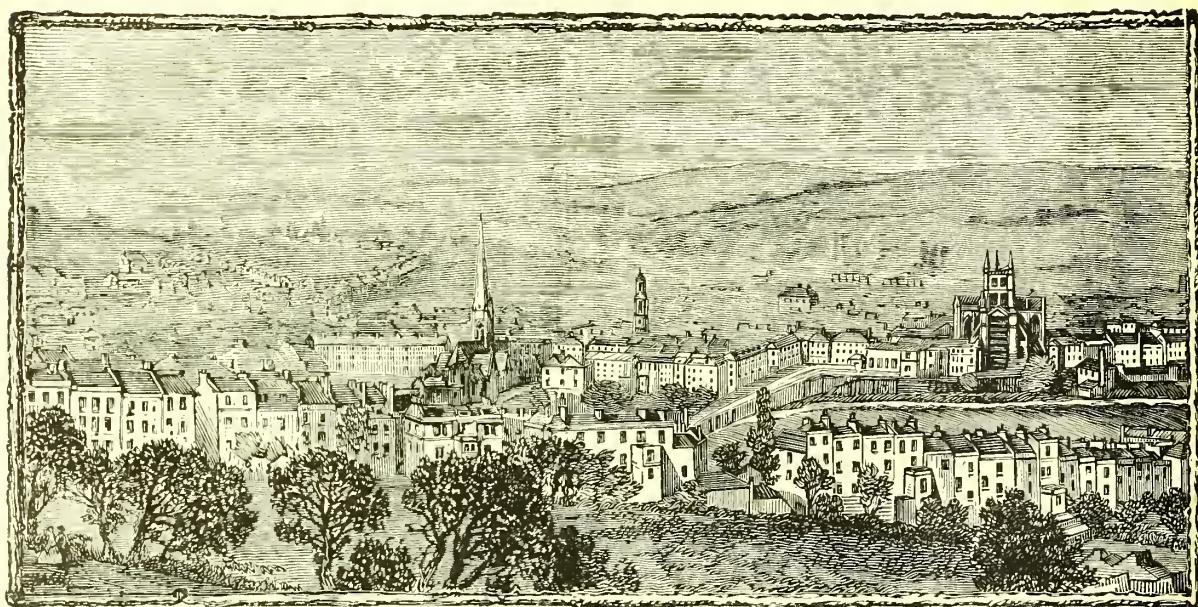
Article	Stocks		Imported		Delivered	
	1888	1887	1888	1887	1888	1887
Aloes ..cs & pkgs	6,253	5,589	4,178	3,637	3,647	3,306
", ..gourds	2,235	116	597	143	4,040	249
Anise, Star ..chts	167	321	103	217	113	135
Arrowroot ..cks	15,002	16,132	12,042	13,936	10,014	9,676
", bxs & tins	8,334	8,934	4,287	8,214	5,999	3,785
Balsams ..cks, &c.	232	751	153	603	516	543
Bark, Medicinal cks & cs	15,093	10,964	19,390	21,723	16,125	18,622
", srns, &c.	46,274	50,319	27,129	28,925	28,601	33,072
Borax ..pkgs	1,891	1,336	667	2,459	11	807
Calumba .."	2,138	1,252	988	1,331	1,502	1,606
Camphor .."	2,230	3,906	5,288	3,625	5,06	5,895
Cardamoms ..chts	862	1,121	2,057	2,839	1,935	2,451
Cochineal ..srns	4,570	5,541	2,043	2,122	2,752	3,443
Coco, Ind. bgs, &c.	441	476	451	234	299	238
Cream of Tartar cks	11	11	19	27	21	27
Cubeb ..bgs	241	77	423	277	300	292
Dragon's Blood chts	54	110	127	93	152	120
Galls, China, &c. cs	3,623	2,912	8,144	3,476	6,323	3,122
Trky & Prst sks	4,496	5,009	6,099	4,788	4,660	3,788
Gum:-						
Ammoniac pkgs	154	279	8	128	84	134
Animi & Copal pkgs	5,348	3,158	6,762	4,263	5,793	6,017
Arabic .."	16,930	13,575	21,423	10,913	15,695	15,547
Asafoetida .."	422	526	303	72	331	323
Benjamin .."	2,095	1,832	2,377	1,645	1,80	1,450
Damar .."	2,663	4,056	8,137	3,563	3,920	4,254
Galbanum .."				1	—	1
Gamboge .."	112	164	146	212	170	251
Guaiacum .."	32	95	3	48	48	29
Kino .."	119	67	66	12	47	37
Kowrie ..tons	1,674	733	2,323	1,255	1,679	1,377
Mastic ..pkgs	115	111	49	10	33	25
Myrrh .."	462	519	357	631	419	243
Olibanum .."	5,193	5,005	6,838	5,877	5,637	4,30
Sandarac .."	1,182	1,156	1,203	983	1,070	1,076
Tragacanth .."	5,337	918	7,423	1,814	3,992	1,495
Indiarubber, E.I. tons	420	327	551	547	386	315
Madagascar .."	43	11	91	49	73	46
S. American .."	152	135	283	28	241	137
African, &c. .."	610	300	683	572	671	455
Total .."	1,225	83	1,606	1,426	1,371	933
Indigo, Bengal chts	5,038	5,531	7,004	7,938	4,831	6,023
", Madras .."	983	710	853	830	804	901
", Kurpah .."	6,932	5,039	9,179	6,442	5,025	5,810
", Manilla .."						
", Figs, &c .."	1,743	2,027	1,247	1,562	1,123	1,413
", Total East .."						
", Indianachts	14,806	13,307	18,293	16,852	11,789	14,147
", Spanish srns	3,273	2,232	5,972	3,745	4,531	3,392
Ipecac, casks & bags .."	22	229	312	371	412	248
Jalap ..bls	194	194	152	89	109	49
Lac Dye ..chts	6,061	7,592	—	28	410	247
Mother-o'-Pearl .."						
Shells ..cwtw	12,689	17,976	29,733	22,416	27,641	16,910
Myrrabolans ..tus	8,706	8,170	5,885	7,245	7,708	7,09
Nux Vomica pkgs	453	454	983	489	1,076	694
Oils:-						
Anise ..cs	42	184	106	110	130	112
Cassia .."	56	180	129	210	175	127
Castor ..cks	668	499	296	395	519	492
", ..cks	11,434	3,911	11,461	3,751	7,537	6,278
Cocoa-nut ..tns	1,978	1,833	3,143	3,292	2,934	2,763
Olive ..cks, &c.	769	942	1,608	3,401	1,516	3,297
Palm ..tns	237	181	153	81	124	80
Opium ..chts, &c.	1,517	2,115	459	1,255	1,077	1,288
Rhubarb ..chts	1,164	1,407	1,019	833	1,082	1,281
Safflower ..pkgs	371	397	301	293	302	310
Sarsaparilla ..bls	689	480	1,039	1,001	867	884
Senna ..bls, &c.	1,084	1,935	1,232	3,341	2,664	2,276
Shellac ..chts, &c.	51,809	41,332	32,132	27,070	22,003	19,594
Garnet .."	18,579	17,502	9,717	10,849	6,058	4,963
Benton .."	10,951	13,031	6,074	7,505	6,309	5,972
Total ..chests	81,339	74,855	47,923	45,424	34,370	30,532
Sticklac ..chts, &c.	4,193	4,203	907	637	1,094	543
Gambier ..tns	830	459	6,439	7,038	7,633	8,284
Cutch .."	2,319	811	3,918	1,544	2,551	2,071
Turmeric .."	3,291	2,147	1,492	1,566	769	1,291
Vermilion, chts, &c.	15	55	49	69	97	68
Wax bees ..bls & srns	504	1,000	260	734	355	733
", ..cks & cs	1,533	1,630	1,696	1,972	1,840	1,669
", ..cakes	3	18	24	26	—	—
Wax, Japan ..pkgs	1,377	656	1,412	454	1,017	1,145

THE

British Pharmaceutical Conference.

TWENTY-FIFTH ANNUAL MEETING.

BATH, SEPTEMBER 3, 4, 5, AND 6, 1888.



BATH FROM THE CASTLE.

BATH had been selected by the British Association for its annual gathering in 1888, and the Pharmaceutical Conference, faithful to its only twice broken tradition, resolved last year at Manchester to accompany it, even in the absence of the invitation from the pharmacists of the city to be visited, which had come to be looked for. Fortunately and properly the Conference had resolved a few years previously to clear itself of the encumbering character which had become associated with it, and had decided that all visitors to its meetings should be required to pay a proper sum for their entertainment. If the spirit of that resolution had been fully respected by Manchester, Birmingham, and other places, the reluctance of the Bath chemists to undertake a task, the extent and cost of which was to them problematical, would not perhaps have been manifested. Whatever difficulties existed, however, were overcome. Mr. Benger, Mr. Naylor, and some other officers of the Conference visited Bath some months back, and they had the fortune to secure the generous co-operation of Mr. Hutton, a partner in the firm of Tylee & Co., who took upon himself the onerous duties of local secretary, and to whose patience, courtesy, and tact much of the success of the meeting has been due.

MONDAY, SEPTEMBER 3, 1888.

A LARGER number of pharmacists than had been at one time expected arrived in Bath during the day from various directions, and with a great deal of preliminary planning were comfortably stalled in the various hostleries of the city. Many of these are characterised by the old-world air which hangs over Bath, and it is curious to observe in such a city how many of them sport the title of "commercial." The "Royal," the "York," the "Christopher," the "White Lion,"

the "Angel," the "Cross Keys," and many other places were all liberally pill'd and drugged during the week; but the headquarters of the Conference were established at the "Grand Pump Room Hotel," a very imposing structure, and well worthy in all its arrangements of the aristocratic character of the city which it adorns. It contains a handsome assembly room, where the meetings of the Conference are to be held, and here this evening has been held the lately introduced first feature of the meeting, a reception or conversazione. On this occasion visitors attended on the invitation of the President, and those whose judgments were influenced by the luxurious commissariat organised in an adjoining saloon were inclined thus early to regard Mr. Benger as an unqualified success in his presidential capacity. Music was also provided, and the visitors were quite as many as the room would comfortably hold. The conversazione lasted from eight till half-past ten, and formed a very agreeable introduction to the more serious business.

TUESDAY, SEPTEMBER 4, 1888.

MR. BENDER took the chair at a few minutes past ten, with the Mayor of Bath on his right. At the time close upon a hundred members were present, including about a dozen ladies. The audience was increased by the time that the President's address was delivered to considerably over the century.

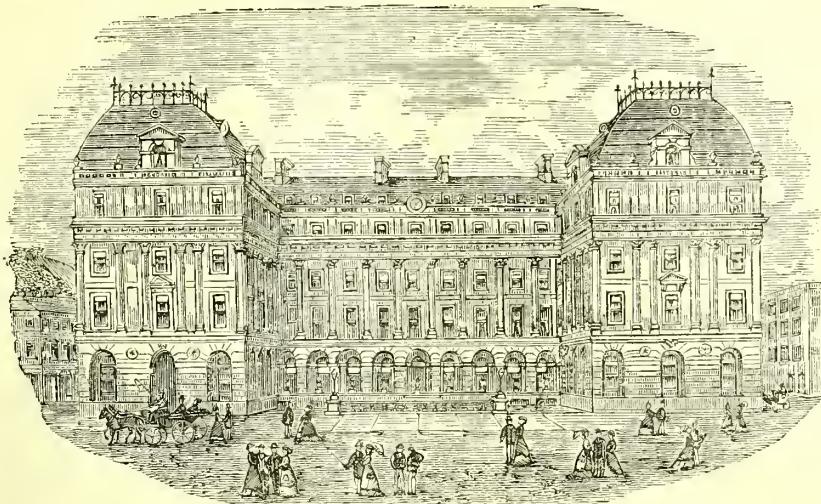
WELCOME BY THE MAYOR.

The PRESIDENT (who on rising was received with hearty cheers) in opening the proceedings, said: Ladies and gentlemen, we are honoured by the presence of the Mayor this

morning. His worship's time is naturally very much occupied this week, and as he has another engagement immediately it is necessary for us to commence our proceedings at once. I will call upon the Mayor to address us a few words of welcome. (Cheers.)

The MAYOR (Alderman Hammond) said: Mr. President, members of the Pharmaceutical Conference, ladies, and gentlemen,—With one voice of welcome the city of Bath always receives her distinguished visitors. We look upon you as some of those distinguished visitors; and, therefore, we are glad to extend the same welcome to you as we do to the British Association. Perhaps the visit of the British Association may rather overlap yours, and I regret that I cannot extend to you personally the right hand of fellowship in giving you a dinner as I should have been glad to do had I not been otherwise engaged. Gentlemen, when people are in health they do not think much of one another, they

entirely within the last two years, because they wanted to provide every modern system. He did not wish his audience or their friends to be sufferers from rheumatism, but if they did suffer he was sure after visiting the baths they would come there themselves, or recommend others to come there. As he had said before, when they were sick they were glad to go to the medicine-man, who, in this case, was the baths. (Laughter.) He regretted that he and the Mayoress were unable to attend the conversazione on the previous evening. It would have given them great pleasure to attend, but he had not been able to discover the art of being in two places at once. He was glad to see among the papers to be read at the Conference one by Mr. Conroy on the adulteration of lard. A good many discussions had taken place at the meetings of the Sanitary Committee of the city on that subject, and if lard were adulterated, and the Conference would point out the means of detecting it, they would effect an important service not



THE GRAND PUMP-ROOM HOTEL.

think more of themselves; but when pain and anguish wring the brow they are very glad to resort to what I may call the medicine-man. (Laughter.) Well now, gentlemen, this Pharmaceutical Conference, as I understand it, is a body of practical chemists. I hope I am not in any way detracting from their merits by calling them so, but my impression is it is a very good work they do in insuring the people the best drugs we can get hold of. It is of great consequence to invalids to have as pure drugs as possible, and this Conference, I am sure, promotes that in every way; and with the learned lectures we are to hear this week I suppose we shall all know a great deal more of drugs than we know at present. I do not mean to say that the members of the Pharmaceutical Conference do not know about them, but it is the general public who attend your discussions that I refer to, and I should advise them to sit still and say nothing. It is bad enough to be ignorant, but to have to confess your ignorance is to almost face social ruin. The Mayor proceeded to say that in the city of Bath there is a good deal to see: there were the baths and abbey, the Victoria Park, lately enlarged by the Botanical Gardens, which were now ready for inspection. They would find every flower described by name, and a list of flowers that were in bloom at this time of the year. There is a little brass box inside one of the pillars of the entrance to the park into which they might drop their mite, for he reminded them that it was almost entirely supported by voluntary contributions. They would excuse him for saying that, but when he saw such a distinguished company before him he felt sure they would not like to leave the town without doing something distinguished in their particular way. He said they had arranged tours during their visit, and he should have been very glad if he could have joined with them to renew his acquaintance with the ruins of Tintern Abbey and the glorious scenery of the Wyndcliff. With regard to the baths he informed them that they had built all the new part

only to Bath, but to other places also. He had no doubt the paper would be very interesting and exhaustive.

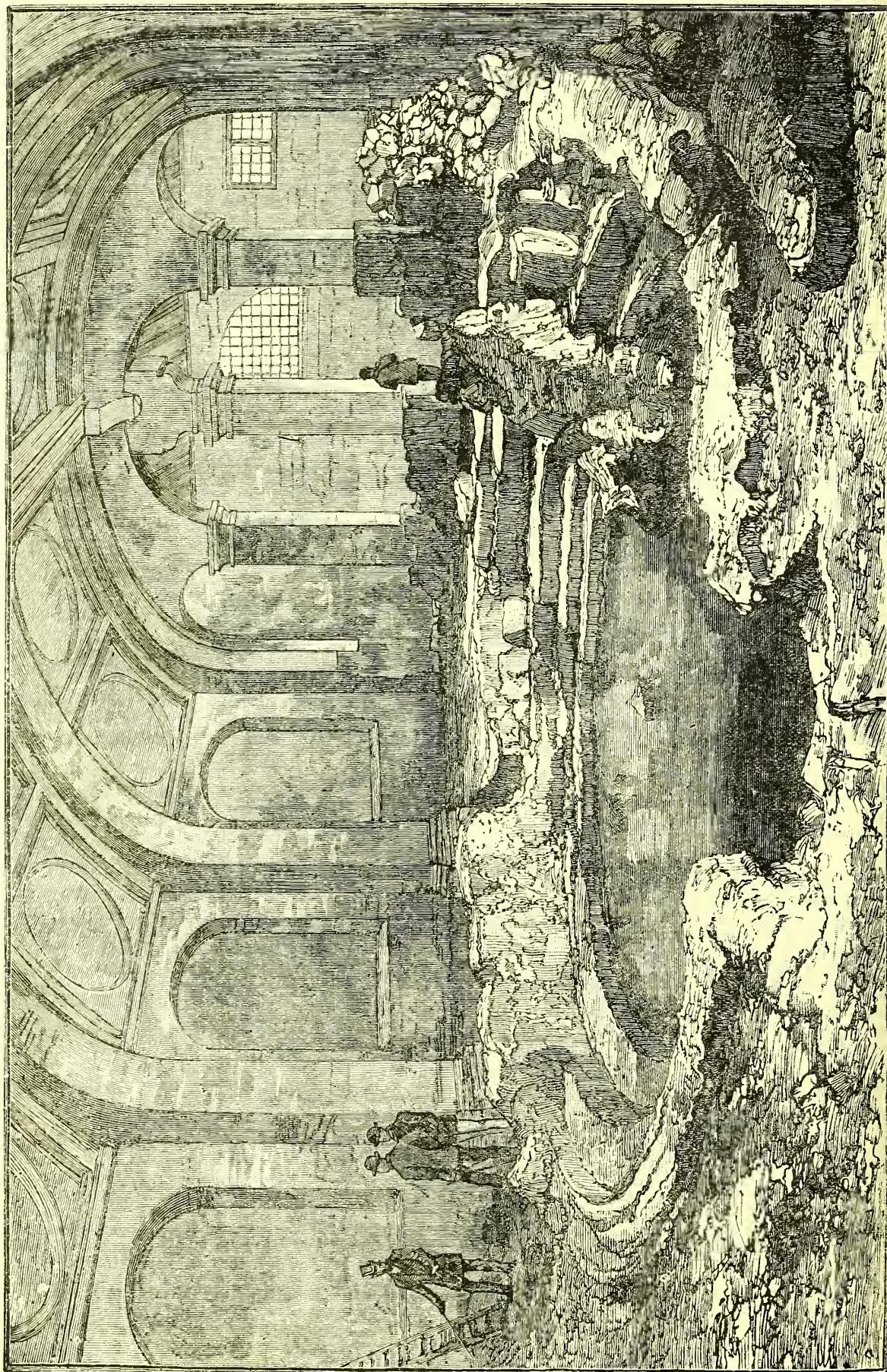
The PRESIDENT: Mr. Mayor, ladies, and gentlemen,—The members of this Conference will, I am sure, desire me to express on their behalf, as well as on my own, our high appreciation of the kindness and courtesy which has prompted the Mayor to meet us this morning, and to offer us this cordial welcome. We thank his worship, too, for the official recognition of the Conference, and through it of pharmacy, which is afforded by his presence to-day, and it would be in accordance, I am sure, with your feelings if I add to our expressions of thanks to the Mayor a very hearty wish for the continued and increasing prosperity of the beautiful city over which he presides. (Cheers.)

The Mayor, expressing regret that he was obliged to go, then left the meeting amidst acclamation.

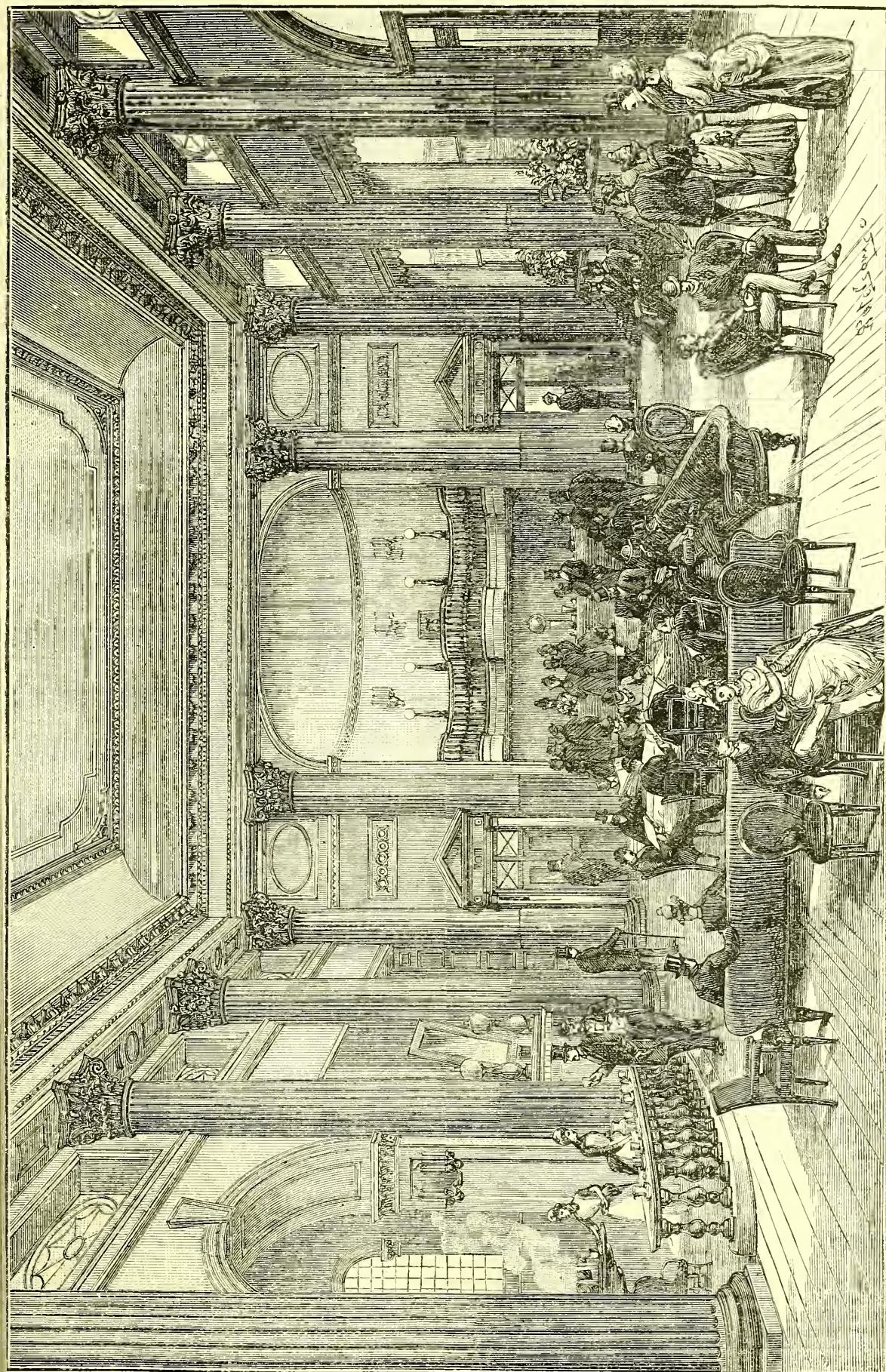
The PRESIDENT announced that the Bath Literary and Scientific Institute was open, through the courtesy of the committee, to all members of the Conference during the visit. The Institute had a reading-room, library, and museum, and the committee had written expressing a wish that members of the Conference would regard themselves as members during the meeting of the Conference. (Cheers.)

APOLOGIES AND DELEGATES.

Dr. Thresh then read extracts from letters of apology for non-attendance. Dr. Brady, F.R.S., regretted that circumstances were too strong for him to attend; Professor Attfield, F.R.S., was sorry to deny himself the pleasure of being present; Professor Bentley was very sorry to be unable to attend; Mr. John Williams much regretted his inability to come: he trusted in future years to have health to renew his connection with the Conference; Mr. R. Reynolds regretted that he was unable to renew his acquaintance with friends made at the meeting held in Bath twenty-four years ago. Mr. Carteighe, president of the Pharmaceutical Society, wrote from Switzerland.



THE ROMAN BATHS OF AQUE SOLIS, AT BATH.



INTERIOR OF THE GRAND PUMP ROOM, BATH.



F. Baden-Powell

THE PRESIDENT.

THE PRESIDENT'S ADDRESS.

A SILVER WEDDING.

LADIES AND GENTLEMEN.—We celebrate to-day the silver wedding of pharmacy and good fellowship. On September 2, 1863, twenty-five years ago, the inaugural meeting of the British Pharmaceutical Conference took place at Newcastle-on-Tyne, and a year later the first annual meeting was held in this city under the presidency of the late Henry Deane. No eulogium on my part is needed to keep his memory green in the hearts of those amongst us who knew him, the mere mention of his name calls up for us a vision of kindness and wisdom; but, standing as I unworthily do in his place, it is fitting I should tell younger members that Henry Deane was prominent amongst those who, twenty-five years ago, sowed the seed—a veritable mustard-seed—which has grown into the widely-branching British Pharmaceutical Conference of to-day. At Bath in 1864 our membership roll was a little over 100. At Bath in 1888 we have nearly three times that number of foreign and colonial members alone, and our total roll, though smaller than in some former years, approaches 2,000 names.

It is unnecessary that I should detail the scientific work done by the Conference—is it not written in the goodly row of 'Year-books' which adorn our shelves?—but I may mention that its members have contributed upwards of 500 papers to the annual meetings, whilst a glance at the list of visitors in recent years will show how widely the opportunities for discussing such communications, and for friendly intercourse amongst pharmacists are recognised and valued. There is scarcely any part of the United Kingdom which does not supply its contingent. We began with a little party of 21 at Newcastle in 1863, and we were 250 at Manchester last year.

THE QUARTER OF A CENTURY

omprised in the life of the Conference has been fruitful, perhaps beyond precedent, in the beneficent results of applied science. So wide and rapid has been the development of the scientific spirit that it pervades every department of human knowledge.

One striking result is the improved condition of public health. The average annual death-rate, which in nine of the

largest cities and towns of England for the ten years from 1865 to 1875 was 27.8 per thousand, fell in the succeeding ten years to 24.2, and, if we take the last ten years of the interval, to 21.5. It has been estimated that upwards of 247,000 persons now living would have been dead had the earlier death-rate been maintained. According to Sir Spencer Wells, the average duration of human life in this country has increased from thirty to forty-nine years during the last half-century, and much of this increase has taken place within the shorter period under consideration. Now, although we, as pharmacists, or as a conference, can claim but little credit in connection with these important facts, we are, as scientific men, at least able to understand them. We at least know that they are due to the scientific study of diseases, their origin, nature, modes of propagation, &c., to the wise application of sanitary laws based on the teaching of science, and to the diffusion of knowledge of the natural laws of health amongst the masses. But if we extend our view of the benefits conferred by science on suffering humanity a little further, and endeavour to realise the extent to which the burden of pain in the world has been lightened, we find that the chemist, and in some degree the pharmacist, has played an important, if sometimes unrecognised, part in the work.

Some of my predecessors in this chair have in past years laid before us the relation of pharmacy to the State, to medicine, &c. We may, perhaps, for a few moments this morning consider first

THE RELATION OF PHARMACY TO PHARMACISTS, to ourselves; and then, as far as time will permit, the education and training most likely to improve this relationship.

In the first place, pharmacy has been adopted by most, perhaps by all of us, as a means of living—though some of us may have come to take pleasure in it for its own sake—and I ask you to descend with me for once to the low and commonplace standpoint, whence we may again regard it in its original light.

Pharmacy, in the strict dictionary definition of the word—the preparation of medicines—has, however, not been the sole, nor often the chief source of income of the British pharmacist.

The practice of pharmacy has formed a centre round which a business in certain sundries, varying with the requirements of the period or district, seemed naturally to grow up. The production of some of these in their best forms demands a skill very nearly allied, and scarcely inferior, to that required in the preparation of medicines, whilst the sale of others with less obvious relationship to pharmacy has for so many years been associated with it that a connection appeared to have been formed by long usage. To some extent, however, in all districts, and to a very great extent in some, pharmacy has of late been stripped of this associated trade. I will not weary you by discussing at length how this has come about. The causes are not far to seek, and are sufficiently obvious. Businesses of all kinds have become less distinct and definite,

SHOPS ARE BEING REPLACED BY STORES, individual proprietors by limited companies, striving to make their price-lists as comprehensive as possible, one "universal provider" taking the place of a hundred or, perhaps, a thousand businesses of a dozen denominations. Capitalists, unwilling, it may be, that their names should appear in trade directories, are nevertheless willing to engage *incognito* as shareholders in businesses of which they are wholly ignorant if they can get 5 per cent. for their investment, whilst the public, with whom price, cost, has come to stand before quality, for the simple reason that they can understand and appreciate the one, but in many cases are quite incompetent to judge of the other, have supported these undertakings, content, nay, jubilant, if they can save 10 per cent. in an annual expenditure on chemists' wares of 5*l.* or 10*l.* All this has affected very seriously our means of living.

WHAT, THEN, IS THE REMEDY?

Either we must get more pharmacy, we must regain our lost trade, or we must replace it with some other remunerative occupation.

There appears to be no immediate prospect of any considerable transference of dispensing from medical men to

pharmacists. The medical profession is becoming more and more crowded with men who have to live by it, or, at least, to try to do so, and a bottle of medicine thrown in with their advice doubtless adds to the pecuniary value of the latter in the eyes of a large proportion of their patients. Elegant pharmacy, so called, is responsible for a good deal of this. In olden times dispensing was more or less disagreeable work. Pill mixing and rolling was a duty entrusted to the surgeon's apprentice or pupil; now, since medical apprentices have ceased to be, dispensing by medical men themselves has been simplified, promoted, and encouraged by the introduction of pearl-coated pills, delicately-flavoured syrups, &c., which can be dispensed in a moment. These are sure to please the patient, and, if they do not cure him, he may possibly recover during their use, and give them and the doctor the credit.

So it has come about that, whilst a large number of medical men dispense their own medicines, very few—scarcely any—make their own preparations. Buying their galenicals ready made, many know little or nothing of pharmacy; some, indeed, as pointed out by Mr. Greenish from this chair two years ago, appear to be willing to delegate prescribing, and to accept, on the recommendation of

ENTERPRISING MANUFACTURERS,

compound remedies, the proportions, and often the very names of the active ingredients in which, are withheld. In such cases the manufacturer becomes virtually the prescriber, the medical man merely the dispenser, and the qualified English pharmacist is out of it altogether. Is it not a reproach to pharmacy that so many of the preparations dispensed by medical men, and even prescribed by physicians, or purchased and used by the public on their own responsibility, should be manufactured by persons who possess no legal qualification to practise pharmacy in this country?

We all know that Parliament has in its wisdom decreed that only the retail pharmacist needs a legal qualification, to be acquired after passing examinations which include a knowledge of raw drugs, their sources, varieties, adulterations, &c., whilst the man who is, or calls himself, a wholesale manufacturer of medicinal agents is subject to no control. As a result, medical men are constantly called on by plausible adventurers or their agents, who

"TALK UP"

the wonderful virtues of their specialities, some of them even going so far as to assume the gratuitous instruction of the medical profession in the treatment of particular diseases.

In my opinion the wholesale manufacturer should possess the same legal qualification as the retail pharmacist, or, to put it another way, it is the qualified pharmacist only who should be the producer of pharmaceutical preparations, whether supplied direct to the public or through medical men.

I consider that those members of the medical profession who—necessarily ignorant of the quality of many of the galenicals they prescribe—ignore or neglect the obvious safeguard and guarantee afforded by the qualification of the maker, fail in their duty towards their patients. We pharmacists might, with as much show of reason, recommend the unqualified and unregistered medical quack, when asked, as we so frequently are, to advise as to the choice of a physician.

In the future, as in the past, there will doubtless be a certain amount of

DIFFERENTIATION IN PHARMACEUTICAL PRODUCTION; no man will produce all the preparations he uses or sells, but he may make most of them, and it is open to him to endeavour to obtain a special reputation for some. The field for pharmaceutical research is by no means exhausted; of late years new drugs have monopolised a large share of attention, to the partial exclusion of older ones, but there is much original work still to be done on many of the latter, and since we are regarding the matter to-day entirely from the point of view of the pharmacist with a living to make, I will add remunerative work. In connection with this subject it will be well to bear in mind that elegance is not invariably associated with vigour, even in a pharmaceutical preparation. There is some temptation to aim chiefly at

making things pleasant to the eye and palate. The true pharmacist will, however, never forget that his products must be potent as well as palatable, that indestructibility is not a desirable quality in a pill, be that pill never so tasteless.

He who selects a particular drug or class of drugs for investigation, and repeats, to begin with, the published experiments of others, very probably detects some flaws either in the methods employed or in the conclusions arrived at. Pursuing his inquiry, he soon finds himself in the fascinating region of the unknown. Where every path is untried there is always the possibility that one may lead to the discovery of a new fact; it may be but a trifling addition to our knowledge—it may be of unsuspected importance—who shall say? In any case he can hardly fail to invigorate his mind by such an excursion, and be better fitted to undertake another. Endowed with an "intellectual interest in his work" he will certainly derive a good deal of pleasure from its performance. Should he succeed in producing a new or improved preparation he has still to find or make a market for his productions. It will be necessary for him to adopt some means of introducing them to the notice of those who will use them, and he can do this without sacrificing one whit of his honour, or tarnishing by the faintest streak his good name. As a high-minded man he will of course say no word of them by mouth or printer which he does not know to be strictly true. It matters little whether he keeps his processes secret or not. It is the constant study of details, the accumulated experience of many days, which enable a man to build up a reputation, and one thus securely built will stand a good deal of battering from without. There may come a critical time when the productive capacities of his back shop or laboratory are found insufficient, and a larger building with more adequate appliances become necessary. At once his preparations are open to the reproach of being

"FACTORY MADE."

If this is the worst that can be said of them, however, they will probably survive.

Such a possible development of any department of his business is a perfectly fair and honourable one for the pharmacist to aim at, and one worthy of his ambition. If he can succeed in doing anything better than it has been done before, he will find no difficulty in obtaining better payment for his work.

Dr. Squibb, of New York, in the last number of his "Ephemeris" (June, 1888), remarks on the fact that the important class of fluid extracts was originated by William Proctor, jun., of Philadelphia, and adds, "He was throughout his fruitful life a dispensing pharmacist; and he earned first by faithful ability, and then commanded, prices for his preparations which were liberally remunerative."

I am aware that there are not wanting indications that the unbounded faith in physic which has long dwelt in the human breast is waning, at least amongst the more educated classes—some even of our leading medical men, who do not dispense their own medicines, have begun to talk of the uselessness of drugs. The truth of the axiom, "Prevention is better than cure," is not only admitted, but acted on. Increasing attention is being paid to hygiene, sanitation, diet—matters outside physic, but relating to health—the pharmacist may, however, often render as valuable services in providing the means of prevention as in the production of remedies.

There are few callings which have more far-reaching affinities than that of the pharmacist. It has sometimes been said that his training and daily work have a tendency to narrow his views and dwarf his mind. I differ entirely with this opinion. A well-trained pharmacist has many strings to his bow. His acquired habits of minute observation, absolute accuracy, and careful attention to details should be invaluable to him. As a business man he learns much which the pure scientist often lacks, whilst as a scientific man he possesses knowledge beyond that of most of his business competitors. His daily work brings him in contact with many sorts and conditions of men, and he has special opportunities of learning much of the everyday requirements of his fellow-creatures; but I fear as a class we have been a little deficient in self-reliance, too apt to look for, and depend on, outside help, the protection of some

hypothetical Act of Parliament, the tender care of this society or that. It is time we made a fuller and more extended application of that scientific knowledge the possession of which we sometimes assure the world is our special characteristic.

If some of the trade formerly associated with pharmacy as been alienated, the field for the practical application of science has enormously increased. The pharmacist must fit himself to occupy part of that field. If he will trust more to the scientific side of his vocation, there is room for him et.

Briefly, we may, I think, rest assured that the success or failure of

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will largely depend on his fitness to accommodate himself to somewhat altered and modified conditions, that amongst these modifications will be a diminished demand for his services as a mere distributor of miscellaneous sundries, and that, so far as the art of pharmacy is concerned, more scientific and clinical training will be necessary. His success will largely depend, too, on his recognition of the fact that outside pharmacy proper, but allied to it by family ties, as it were, are fields for skill, industry, and enterprise in which his clinical and scientific knowledge may be profitably employed.

The pharmacist should need no reminding that chemistry is very important bearings on the production of innumerable articles in domestic use besides medicines, further, that the manufacture of many of these is in the hands of unscientific men, and that the processes employed in their production have not yet been worked out on scientific principles. Who so fit as the pharmacist is, or ought to be, to take up the study of some of these? A very slight improvement in any one in common use may turn the stream of prosperity in his direction. It is scarcely possible that a knowledge of recently discovered chemical reactions and processes, and of the constantly increasing number of new chemical bodies which are placed at our disposal should not afford the means of such improvement to the industrious and intelligent worker.

But his work must be real, and he must have something more than a label to show for it.

I lately read on one of these—it was not used by a member of this Conference—that the preparation upon which it was based was “the result of a long period of careful study and research.” This “result” was further described as “a new and matchless remedy for baldness, and a never-failing provider of whiskers and moustaches.” Men who are guilty of schools such as these degrade the art and science of pharmacy, hinder its progress, and do their best to bring contempt and ridicule on those who practise it, besides stamping themselves as quacks and charlatans.

One is sometimes reminded in these announcements of Captain Wragge in “No Name,” who at one period of his career was occupied in “imitating the vintage processes of nature in a back kitchen at Brompton, where he produced a sorry, pale and curious, tonic in character, round in the truth, a favourite at the Court of Spain, at 19s. 6d. per dozen, bottles included.”

We have been told from our youth up that “knowledge is power.” Doubtless, but it is latent power, and unless we convert it into some active form, it will not greatly improve our condition, or that of the rest of mankind. Had Swan, himself a pharmacist, and a member of this Conference, pursued his study of electricity no further than is necessary in order to pass the examinations of the Pharmaceutical Society, or had he at a later date hidden his light under a bushel, we should not have had the Swan incandescent lamp, nor Swan the fortune it brought him.

Even to take advantage of the researches of others, to convert theory into practice, to discover the latent elements of practical application in the bare philosophical announcements of the pure scientist demand mental qualities which are a product of training and education.

But whether the pharmacist of the future confine himself to be preparation and distribution of medicinal agents, or widen his field of labour in some of the many directions open to him, one thing is certain—he must keep step in the march of progress. The general and technical education which was enough for our fathers was found to be in-

sufficient for us, and already it is evident that our sons must be better equipped than we are to make and maintain a position in the future. From the class below us in the social scale a process of natural selection is sending up youths who will be formidable opponents to those of gentler birth, when they meet a few years hence in the struggle for remunerative employment. On all sides foreigners are taking the field against us, and are invading our very thresholds. Those engaged in almost every scientific industry have seen this danger, and are making efforts to avert the catastrophe. Better and broader education, more technical skill and training, more self-denial and self-reliance are found to be necessary. Shall we pharmacists be the last to recognise the fact that our own shortcomings are one cause of the prevailing depression in our ranks? There is good reason for the interest lately shown in the question of

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of pharmacists. We may well ask ourselves whether our present system is well adapted to furnish those who are hurrying into our business in such vast numbers with the means of earning that amount of remuneration without which it is impossible to be happy, to do our duty to ourselves, to our families, or to our calling, or to be respected and influential citizens of the State; and if we adopt adequate means of sifting out by our Preliminary examination those who are not sufficiently educated to have a reasonable hope of a successful career.

Our present system of apprenticeship is a survival from the time when it was possible for the whole art and mystery of our vocation to be learnt in a shop. His daily round of duties brought the youth into contact with all it was then necessary for him to know, but apprenticeship in the old sense is insufficient to supply the requirements of the modern pharmacist. Shop training, all important as it still remains, is not alone enough; much that is essential to his success cannot be learnt in the shop. How, where, and when can this supplementary knowledge be best acquired?

I have thought that we might derive some assistance in further considering these questions by a knowledge of the system of training adopted in other countries; and in order to obtain the latest information on this point, I put myself in communication early this year with a few leading pharmacists and professors in pharmaceutical schools abroad. To their courteous replies I am indebted for the following details.

The questions I addressed to these gentlemen had reference chiefly to the conditions of apprenticeship or pupilage, and the subsequent or pass examinations enforced in their respective countries. I inquired, further, if pharmacists usually prepared their own galenicals, or purchased them from wholesale manufacturers, and if such manufacturers were subject to any legal restrictions; and I invited my correspondents to express their own views as to whether existing arrangements worked satisfactorily or otherwise.

I have received answers from France, Germany, Austria, Belgium, Italy, Switzerland, Russia, Sweden, Denmark, Holland, the United States, Canada, and Australia.

I propose to furnish these replies as nearly as possible in the words of my correspondents, whose eminent position gives much weight to their opinions.

All the pass examinations include, of course, more or less chemistry, botany, materia medica, and pharmacy. For the sake of brevity I have, therefore, omitted these in alluding to the different examinations, merely enumerating those additional subjects which are interesting, as showing the wider range of knowledge required in some countries.

FRANCE.

M. A. Petit, President of the Association Générale des Pharmaciens de France, has kindly given me the following particulars:—

Before apprenticeship the youth must obtain the degree of Bachelor of Science, if he wishes to be a pharmacien of the first class, or pass a less difficult examination if he intends to be a pharmacien of the second class. The legal term is three years, and if bound for this period no payment is made on either side, the apprentice receiving board and lodging for his services; but if, as frequently happens, he is bound for only two years, a premium of 900 or 1,000 francs.

is paid. The final or pass examinations are the same for pharmaciens of the first and second class, and take place after a three years' course of study at the School of Pharmacy. They include practical pharmacy, toxicology, detection of adulterations, physics, natural history, mineralogy, and microscopy. The wholesale manufacturer must be a pharmacien or employ one as a manager.

M. Petit writes:—"The question of apprenticeship is causing us much concern. The three years are badly spent, and this is in a great measure due to the desire of pupils to obtain payment in money. As soon as a pharmacist begins to pay his apprentice, he acquires himself of responsibility towards him. Besides this there is not much now done in the laboratory of the pharmacist; he supplies himself from factories to the great detriment of his pupils' chances of instruction. Then there is a new class of employés who can manipulate, but are not under any legal obligation; they work under the responsibility of the pharmacist, and never hope to be pharmacists themselves. As these are older and better up in routine work than the regular apprentices, they are required to direct the latter, although their instruction is not worth much. Formerly pharmacists took pride in the instruction of their pupils; now young men and their friends strive to obtain the best terms, and attach little importance to the choice of the house where apprenticeship shall be spent. This tendency leads pharmacists to demand 900 or 1,000 francs for the first year, and after that to allow the pupil to remain or leave, as he likes. We consider this a great evil, and are making earnest efforts to remedy it. An excellent measure has just been adopted. Before commencing their course of study at the School of Pharmacy, pupils must submit to an examination to test the practical knowledge obtained during apprenticeship. They must prepare a galenical and a chemical product according to the Codex, recognise a number of medicinal plants and preparations, and show that they possess some theoretical knowledge. We have already secured excellent results from this examination, and in becoming more strict we shall eventually react first on the pupils and through them on pharmacists. If pupils commence their three years' course of study in the school after a three years' apprenticeship, conscientiously carried out, the scientific level of pharmacy will be much improved."

GERMANY.

Herr Greiss, writing on behalf of Dr. Brunnengräber, President of the German Pharmaceutical Association, and of Dr. Carl Schacht, has supplied the information sought. I am also indebted to Mr. Louis Siebold for some particulars.

An apprenticeship, of not less than two years, is required for those youths who have matriculated at a University, and of three years for such as have acquired a certificate qualifying them for the one year's military service. Pharmacists rarely have more than one apprentice at a time, and undertake his scientific and practical training. The examinations, which are conducted by special committees at the Universities, include laboratory work, analytical chemistry, physics, and knowledge of the laws specially affecting pharmacists. Having passed this examination, and before owning or managing a business, the pharmacist must serve several years as an assistant, and devote eighteen months to study at a University. He may then purchase or hire a business, but he cannot start a new one unless he can obtain from the Government a licence to do so in a locality where the increase of population is sufficient to warrant a further addition to the existing number of pharmacies.

Galenicals are usually prepared in the laboratory of the pharmacist.

Infusions and decoctions are invariably made when required.

Wholesale manufacturers need not pass any examination; they are, however, generally examined pharmacists, or employ such in their factories.

Since pharmacists are required to be competent to undertake chemical analyses they combine in many cases the practice of an analytical chemist with their ordinary calling. My correspondents consider that for the present the laws which regulate the training of pharmacists in Germany are satisfactory.

AUSTRIA.

Herr A. von Waldheim, of Vienna, informs me that an apprentice must be not less than fourteen years of age, have spent four years in a gymnasium (higher or grammar school), and have passed the fourth class. He is then bound for three years. This term may, however, be shortened to two years where the youth has spent eight instead of four years in a gymnasium.

The apprentice is trained in both theoretical and practical matters by his master, as only in Vienna is there a school where he can be instructed in the theoretical part of his vocation. At the conclusion of his apprenticeship he passes a practical examination based on the Austrian Pharmacopœia, but including a knowledge of pharmaceutical and sanitary legislation. He must then spend two years at a university, and afterwards pass two theoretical and one practical examination before a commission of professors of the university.

There are some wholesale manufacturers. These are commonly examined pharmacists, though no qualification is legally required. The leading pharmacists of Austria have long wished to improve the present system of training by insisting on the passing of six instead of four classes in a gymnasium previous to apprenticeship, and by enlarging the subsequent course of study at the university so as to include toxicology and the analysis of food. They hope also to establish more pharmaceutical schools similar to the one in Vienna.

RUSSIA.

Herr A. Forsmann, President of the Pharmaceutical Society of St. Petersburg, and Professor Dragendorff, of Dorpat, are the sources of my information.

An apprentice must have passed at least four classes in a classic gymnasium, and must then serve three years in a pharmacy. He pays no premium, but receives besides board and lodging fifty to one hundred roubles a year for dress. The master takes charge of the scientific and technical training of the apprentice, for which he is responsible to the medical authorities: hence, if too much occupied to conduct this personally he supplies the apprentice with the means of pursuing his studies for a time after the end of his term. The assistants' examination (Minor) is conducted by the medical faculty of the university, and includes besides the usual subjects, knowledge of the laws specially affecting pharmacists, and the making of two pharmaceutical preparations in the laboratory of the university. To obtain the higher degrees of provisor and magister and be qualified to open shop on his own account he must serve three years as assistant to a pharmacist and must study two years at a University. The examination for the degree of provisor includes physic, mineralogy, and zoology. The title "magister" is obtained after an extended examination, and having "written and defended a dissertation." This is the highest pharmaceutical degree, and gives great advantage in State and private employment.

Galenicals are prepared by the pharmacist himself, and importation is strictly forbidden.

Dr. Dragendorff considers the existing arrangements satisfactory, but would like to see a gradual increase in the scientific requirements.

Herr Forsmann would insist on the passing of six instead of four classes in the gymnasium previous to apprenticeship. He considers that there can be no substitute for apprenticeship, believing that the practical training necessary can never be so well carried out in any institution or school as in the laboratory of the pharmacist. As a member of the commission for elaborating the system of pharmaceutical education at the medical court Herr Forsmann speaks with authority when he says, "Certainly there is no doubt that a higher scientific education will be the foundation of the proposed new regulations."

BELGIUM.

My correspondent has been Professor Gille, of Brussels. The law demands a two years' apprenticeship after the youth has passed a preliminary technical examination and become what is called a "candidate." This examination includes theoretical and practical chemistry, physics, botany, and the elements of geology and mineralogy. During his apprenticeship he generally attends courses of lectures in one of the

schools of pharmacy connected with the Universities. It is now proposed to make the preliminary examination the same as for medical men, *i.e.*, to include rhetoric, logic, and zoology. After apprenticeship he must pass two other examinations, the first corresponding somewhat to our own Minor, and the second, which is entirely practical, including chemical and pharmaceutical operations, the detection of poisons and adulterations, and microscopic research.

Many pharmacists buy their preparations from manufacturers. Compound medicines can be sold only by qualified men pharmacists.

Professor Gille very strongly approves of the increased educational requirements.

ITALY.

Mr. Henry Groves, of Florence, and Mr. Squire, of San Remo, supply me with the following particulars.

There is no regular apprenticeship. After leaving school the youth goes to one of the universities for four years, during the last of which he must also practise in a pharmacy, so that he gets three years' university training—which includes examinations in chemistry (general and analytical), botany, *materia medica*, physics and mineralogy, and he is generally twenty or twenty-one years of age before he commences the practice of pharmacy in a shop.

Mr. Henry Groves is a well-known English pharmacist who has settled at Florence, and has qualified by passing the Italian examinations, going through the prescribed course of study, save that portion which was remitted in consideration of his previous training at Bloomsbury Square. I quote a few paragraphs from Mr. Groves's letter, which are especially interesting, and, I think, instructive.

"Although we have been a United Italy so many years, our national pharmacopoeia has not yet seen the light, and our great law for the regulation of all branches of the healing art is still being studied. However, the manuscript pharmacopoeia has been ready for some time past, and the great Bill is receiving its finishing touches, so that we shall finally be able to range ourselves amongst other nations. Many pharmacists are endeavouring to get the close system of pharmacies such as obtains in some Italian cities, where no new pharmacy can be opened, but at present we do not know what shape the coming law will assume.

"Now as to English assistants, my judgment is based on experience both in England and here, where for many years I have been obliged to employ Germans, for the simple reason that they possess certain qualifications which I looked for in vain amongst my own countrymen. The first of these, and an all-important one for us, is the possession of languages. Here we cannot get on without the four principal ones, and I have never yet had any difficulty in finding German assistants who knew three, and who in a ridiculously short time mastered sufficient Italian to get on nicely with the fourth.

"I should like to know how many of our Minor men a year after their 'squeeze through' would be able to undertake water or urine analysis? Yet to show the advantage of more extended education I may say that I have never had a German assistant who could not set about this task in such a way as to show that he had it all at his fingers' ends."

SWITZERLAND.

My information is derived from Dr. Haslam, of Zurich, and through him with Professor Schär. Apprentices must be not less than 18 or 19 years of age, and must have matriculated. This involves one year's less study than the corresponding examination for medical men, but the majority take the whole matriculation examination. They can then choose whether they will be physicians, lawyers, or pharmacists. If they pass the whole matriculation they are apprenticed for two years, but if they omit the last year's study, for three years. The matriculation ensures a thorough classical and scientific training.

After apprenticeship the student may present himself for the assistants' examination (Minor). This resembles our own, but includes practical pharmacy, I mean the making of preparations. Before passing the Major examination, to be registered as a pharmacist, he must practise Pharmacy for several years in one or more pharmaceutical establishments, and study two years in a university or special school of pharmacy, working during that time in the laboratory of the

institution. This examination includes physics, mineralogy, hygiene, sanitation, analysis of food and drugs, microscopic research, and a written memoir on a subject bearing on pharmacy, *materia medica*, or applied chemistry.

SWEDEN.

I am indebted to Mr. W. Sebärdt, President of the Pharmaceutical Society of Stockholm, for these details. An apprentice must have been not less than seven years in a gymnasium (grammar school), and have learnt Latin. An apprenticeship of not less than three years is required, but not necessarily with one pharmacist. If either the master or apprentice be dissatisfied a change may be made. He must, however, spend not less than one year with the same pharmacist. He receives board and lodging and a small payment for his services. Having passed a Minor examination, he must serve two years as assistant, then two years at the Pharmaceutical College at Stockholm, before he presents himself for the final or qualifying examination. The examinations are conducted by the professors at the Pharmaceutical College, and two pharmacists. They include physics, zoology, and pharmaceutical legislation. Pharmacists make their own preparations, and there are no wholesale manufacturers. Mr. Sebärdt approves of existing arrangements.

DENMARK.

Mr. Madsen, of Copenhagen, has given me much interesting information. Previous to apprenticeship the youth must pass a "Preliminary" at the university, or at any of the grammar schools. This examination includes English, Latin, history, geography, mathematics, natural history, and natural philosophy. The pharmacist who takes an apprentice must report the fact to the physician appointed by Government for his district, to whom he must send the examination certificate. The term is three and a half years, but the Ministry of Justice can shorten this in favour of an exceptionally diligent or clever apprentice, on the petition of the pharmacist with whom he is articled. At its expiration the pharmacist gives an indenture containing a statement of the apprentice's conduct and progress, who then presents himself for the first or Minor examination, and, should he fail, his master is compelled to take him back and allow him to continue his apprenticeship until the next examination. The "Minor" includes similar subjects to our own, with the addition of a knowledge of pharmaceutical legislation. Having passed this, he is qualified to dispense prescriptions in any pharmacy in Denmark, but in order to manage or own a pharmacy himself, he must spend at least a year and a half at the University of Copenhagen, and pass an extended and higher examination. The examinations are conducted twice a year by a board consisting of the professors of the university and one pharmacist. Pharmacists prepare all their galenicals, and pharmacopoeia preparations can be purchased only of them.

HOLLAND.

Dr. de Vrij has kindly replied fully to my inquiries.

There is no formal apprenticeship, but a candidate for the final examination must produce a certificate from a legally qualified pharmacist that he has worked two years in a pharmacy. "In a free country like ours," writes Dr. de Vrij, "there exists no curriculum. The future pharmacist is quite at liberty to get the required knowledge wherever he likes, and in whatever time." Four examinations have, however, to be passed before the candidate is qualified to practise pharmacy.

First.—A Preliminary, which includes Dutch, French, German, and Latin, arithmetic and mathematics.

Second.—Theoretical chemistry, physics, botany, and the elements of mineralogy and zoology.

Third.—Theoretical pharmacy. The application of the physical sciences to pharmacy.

Fourth.—The final or pass examination, which is entirely practical, and lasts about a week. The candidate is required to make chemical and pharmaceutical preparations, to standardise drugs, such as opium and cinchona, to detect adulterations in articles of food and medicine, and to prove practically that he is well up in the duties of a pharmacist generally. The final examination is conducted by a board, which must include two pharmacists.

There is also in Holland a special or modified examination

for assistants. Dr. de Vrij states that amongst these qualified assistant pharmacists are a great many young ladies. "I know some of them," he adds, "whom I would prefer to a male assistant." Notwithstanding this elaborate education and training, many pharmacists buy their preparations from manufacturers, who need not have passed any examination; but every pharmacy in the kingdom is inspected once a year by a special commission, when the pharmacist is held responsible for the quality of his stock, and is fined for every article which is unsatisfactory. "In this way," says Dr. de Vrij, "the evil caused by the fact that manufacturers have passed no qualifying examination is made less dangerous."

Dr. de Vrij adds that the decreasing number of pharmacists in Holland has been erroneously ascribed to the increase in the practice of dispensing by medical men. As a matter of fact dispensing by medical men is strictly forbidden by law in any locality where a pharmacy exists. The decrease is due, he says, to the increased stringency of the examinations, and he concludes as follows. "Since 1849 I have always advocated severe examinations with a view to decrease the number of pharmacists, and elevate the dignity of the profession. I feel happy that I have lived long enough to see in my old age that my endeavours have not been in vain."

THE UNITED STATES.

My correspondents have been Dr. Squibb, of Brooklyn, New York, and Professor Maisch, of Philadelphia. There is no legal apprenticeship in the States. Boys usually enter the shop at about sixteen years of age, and though called apprentices commence as messengers, bottle-washers, &c. They are paid from one to three dollars per week, and what information they acquire while in such capacity is generally in a haphazard way by contact with the business. They are taught only what is connected with their special duties, and commonly their stimulus to learn is the hope of increased pay. They get instruction from their employers in proportion as they are intelligent and apt to learn, but the instruction is mainly in the mechanical part and shop routine. Employers cannot avoid the influence of the fact that a sharp, instructed boy may be instructed for competitors, as he may at any time change employers for better wages. Scientific training, such as is afforded by high schools and academies, is in many cases had before entering the business. They then depend on reading and what practice they can get before attending the schools of pharmacy.

In order to obtain a licence to practise pharmacy, that is, to dispense prescriptions on their own account, they must have had two years' experience in a pharmacy, have attended two courses in a school of pharmacy, and have passed an examination which is of a practical rather than a scientific character.

The majority of pharmacists make their most simple preparations, but a large number buy nearly all from wholesale manufacturers, who generally become such from being successful pharmacists, though no restrictions exist.

Dr. Squibb concludes his letter as follows:—The system of early training of pharmacists in this country is not satisfactory, and is only successful in part, upon principles of natural selection and survival of the fittest. There happen to be enough young men with sufficient education, educability, and intelligence, who try pharmacy as a means of living, and of these enough are found to acquire an appetite for that kind of knowledge, and to lead the others and be successful."

Professor Maisch concludes:—"I do not think that in the United States the educational attainments previous to learning the business, or the course of study during or subsequent to apprenticeship, will be regulated by law. There is as yet little prospect of the enactment of laws requiring systematic scientific education to precede the qualifying examination. Instruction at the College of Pharmacy is sought voluntarily by young men in quest of knowledge."

CANADA.

Mr. A. H. Mason, ex-President of the Montreal College of Pharmacy, has kindly obtained from gentlemen in the different provinces particulars of the system of training adopted in each. These differ somewhat, but time will only permit a reference to that of the Province of Quebec. Boys

are not bound by legal indenture, but are generally engaged with the understanding that they will remain at least three years. They are usually paid from two to four dollars a week, and in the cities live with their parents or board out.

A preliminary examination in English, French, Latin, and arithmetic is required, after which they are placed on the register of the Pharmaceutical Association of the province as "registered apprentices." Any pharmacist employing an apprentice not so registered is subject to a penalty. Having served not less than three years he passes his Minor, and is placed on the register as a "registered clerk." Before he can be registered as a "licentiate of pharmacy," and be fully qualified, he must spend four years as assistant, and attend two courses of lectures on chemistry, two on *materia medica*, and one on botany. The lectures in Montreal are given at night, so that students may retain their situations whilst attending them. The pass examination appears to resemble our Minor.

AUSTRALIA.

Professor Jackson, Director of the College of Pharmacy, Melbourne, has supplied me with particulars which refer only to Victoria, the most advanced of the Australian colonies.

An apprenticeship of four years to a registered pharmacist is required. Masters usually instruct apprentices in shop routine and business habits only, but are compelled by law to allow time during apprenticeship for attendance at classes, &c., at the College of Pharmacy. A preliminary examination, which includes English, Latin, and arithmetic, must be passed prior to apprenticeship. The qualifying examination resembles our own, and is partly written and partly *viva voce*. It is conducted by a board composed of pharmacists and teachers.

In Professor Jackson's opinion the means of early training in Victoria are superior to those in any part of the British Empire. "They would be improved," he says, "by making the course of instruction extend over one university session (a year of three terms). This was the case two years ago, but was altered to a five months' course, as at Bloomsbury Square. Thus there are two courses a year, the same subjects being repeated; but we are hoping to alter this next year, and let the teaching spread over eight or nine months. A five months' curriculum is too brief. A course of lectures or of practical work extending over the university year affords enough time to cover the work required, to pass examinations intelligently, and to make the knowledge real and usable. The various vacations enable students to make up time lost by dullness, sickness, pressure of other engagements, &c. A continuous session without breaks is a blunder. Lectures follow too quickly for the average student to keep pace, and when he is once left behind he never catches up, and the course is wasted."

Such is a brief and necessarily imperfect sketch of the systems and methods of pharmaceutical training adopted abroad. Are there any

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to be learnt from it?

We find, first, that in most countries not only has a preliminary examination, much wider than our own, to be passed, but a more or less prolonged school curriculum is demanded before apprenticeship. In the present defective and unsystematic condition of middle-class education in England, it is probably, as yet, impracticable to insist on any definite pre-apprenticeship curriculum, desirable as it would be. But I am very strongly of opinion—and my opinion is based on a long experience as a member of the English Board of Examiners, that our Preliminary should include a broader range of subjects, so as to form a better test of the intellectual development of the candidate. I wish it could be made to include some science, as in France, Germany, Belgium, Switzerland, Italy, Sweden, and Denmark.

We may prepare the way for the ultimate introduction of a pre-apprenticeship curriculum by the exercise of greater care and discrimination in the selection of our apprentices or pupils, by declining to receive, under any circumstances, youths who have not had what is called a good education—that is as good as can be got—by insisting on the passing of our present Preliminary as a minimum pre-apprenticeship

qualification, and by choosing, as far as possible, those who have already been taught some elementary science.

Quain, when President of the College of Surgeons, after describing in his Hunterian oration the crowd of studies undertaken at once by the medical student, said:—"Supposing that at school young people had acquired some exact elementary knowledge of physics, chemistry, and a branch of natural history—say botany—and the physiology connected with it, they would then have gained necessary knowledge, with some practice in inductive reasoning—the best discipline of the mind for the purposes of life."

Such a training is certainly no less desirable for the pharmaceutical than the medical student.

In a paper read before this Conference at Liverpool, eighteen years ago, I ventured to hint at the possibility of establishing a special school or schools for boys intending to be pharmacists. It seemed to me then, as it does still, that if a youth could enter on his apprenticeship having already had a year or two's special training in the sciences bearing on his vocation, his progress would be much more rapid and secure, and he would be less dependent on those about him for instruction in such matters.

Possibly, a two years' apprenticeship (as is permitted in Germany, Austria, Belgium, Switzerland, and Denmark) might then be sufficient to qualify him to act as a junior assistant, and he would be able to obtain a wider experience in those larger businesses where—though apprentices are not taken—junior assistants are employed.

Last year 1373 boys presented themselves for our Preliminary, an increase of sixty-eight on the previous year. I wonder whether the friends and guardians of a sufficient number of these to support a special school would have availed themselves of it had one been in existence? Could any existing institution tack on to its present course of teaching a junior department for would-be pharmacists?

On reviewing the regulations of other countries as regards the final qualification to practise pharmacy, we see that although a considerably greater range of knowledge is required than we as yet demand—reliance is not, as a rule, placed on examination alone. More or less lengthened periods of study at a university—years of service as an assistant, must be undergone before a full diploma is granted to the pharmacist. Our Continental brethren clearly recognise the importance of combining practice with theory, and education with examination. They have learnt that courses of lectures, long or short, plain or illustrated, will avail little if these are not associated with practical work. 'Touch and handle,' was the earnest injunction of Nasmith, the great Manchester engineer, "remembering," said he, "that gloves, especially kid gloves, are non-conductors of knowledge." It will be noticed that in Germany, Austria, Russia, Sweden, and Denmark a knowledge of the laws specially affecting pharmacists is demanded. This is a very wise requirement, and might with much advantage be insisted on here. Astounding ignorance of our Pharmacy and Poisons Acts is often displayed by those who are most interested in their operation.

Some of the conditions under which pharmacy is practised in most Continental countries differ, as everybody knows, from those which obtain here, but such protection as exists is accompanied by restrictions and regulations which would be irksome or unbearable to us. I think we shall do well not to undervalue our own freedom.

In conclusion, let me urge on those who are entering our ranks, and on you, gentlemen, who are in a position to influence the opinions of some of them—that they should regard their scientific education—not as a troublesome impediment placed in their way by a reckless Parliament, prompted by a pedantic Society—but as the very key to future success.

In the words of Huxley, written twenty years ago, but perhaps even more strikingly true now than then, "As industry attains higher stages of development, as its processes become more complicated and refined, and competition more keen, the sciences are dragged in one by one to take their share in the fray, and he who can best avail himself of their help is the man who will come out uppermost in that struggle for existence which goes on as fiercely beneath the smooth surface of modern society as amongst the wild inhabitants of the woods."

Mr. ATKINS said: Ladies and gentlemen, I rise to propose that the best thanks, the very best thanks, if we have got two sorts, of the Conference be given to our esteemed President for his admirable address this morning. (Hear, hear.) And I propose this not simply in the name of those who are present, but also of that greater gathering, that greater body, which we represent—the pharmacists who will read this address in print. I have just this one simple personal advantage in proposing this vote of thanks, that I have long known and highly esteemed the President. It is somewhat rare, perhaps, to combine in the same man that scientific knowledge which commands the confidence of his *confrères* and that simple, earnest, practical knowledge of the business of pharmacy which the President possesses—that rare combination of the grasp of great principles and that careful attention to the detail, or the examination or administration of those principles upon which our business is so largely built up. Such are the personal qualifications of the President, and those of us who have long known him and esteemed him—and he has been one of my choicest friends for many years—knew that he was capable of rising to the height of the occasion, and that he would most worthily discharge the duties of President. With regard to his address, I won't allow myself to say more than a word. It is a most tempting subject. It is so large, broad, comprehensive, and yet at the same time so full of minute and important details, that I think the highest compliment we can pay the President is this, that we will carefully read and ponder that address hereafter. I think in your name, as well as in my own, I may thank him for the pains he has taken to arrive at the facts of Continental pharmacy and the lessons to be inferred therefrom. Mr. Benger has taken the pains, knowing, as he does, these men well, to find out the representative men, and the names he has mentioned in the various countries of Europe, and also in the United States, are such that we can accept their statements with the utmost confidence. One lesson deeply impressed upon my own mind, at least, is this—apart, it may be, from the United States, which may be an exception to that rule—that in all those countries there exists a prolonged and careful training of the youth even before he enters pharmacy. To that I think we should give the utmost attention. There can be no doubt that those who read and observe—those who travel and inquire in their travels as to the condition of Continental pharmacy—must have arrived at this conclusion, that a very prolonged and careful training is essentially a prerequisite to the entrance upon our business. But there are many other details in that address full of the greatest possible interest, and I am sure not only we who are present, but those to whom I have referred, the immeasurably greater number whom in a sense we represent, and who will be reached through the medium of the press, will pay that just and due compliment to the President carefully to read and study that address. In this beautiful city of Bath, and in this very bright and hopeful morning—rather an exception to what we have had—under the pleasant circumstances under which we are gathered, I am sure we shall accord to the President our heartiest and most cordial vote of thanks for the most admirable and thoughtful address he has given us this morning. (Cheers.)

Mr. BOTTLE seconded the resolution. He was sure that pharmacists generally would read the President's address with great pleasure, and he must give his thanks to the President for the remarks he had made on the late Mr. Deane, with whom he had been long associated.

Mr. MARTIN also thanked the President for his tribute to Mr. Deane, whose pupil and assistant he had been. If it had been his good fortune to have seen this meeting, no one would have been so much satisfied with the success which had attended the Conference as Mr. Henry Deane. It was quite impossible at the conclusion of an address which had covered so much ground as that of the President to offer any comments upon it, but he should like to thank him personally as one of those who were interested in education, and in finding the best means by which pharmacists might be equipped in the future for the struggle in life. His address would be a mine of information for all those who were seeking to secure the education of pharmacists in the future. There might be points in detail on which they would differ, and it was, perhaps, invidious to select one out. But he should like to refer to the question of the want of education of the people of this country as compared with that of other countries. It

would be interesting to them to go to Germany or China—because they were threatened with opposition by Germany and by the heathen Chinee—and see what a number of Englishmen were holding positions in those countries.

The vote of thanks was put to the meeting by Mr. Atkins, and carried unanimously.

The PRESIDENT, in replying, said: Mr. Atkins, Mr. Bottle, ladies and gentlemen, I thank you very sincerely for the kind reception you have given to what I had to say. I am conscious that my address presented many of the worst features of a sermon, but I preached that which I believe to be true, and—what is more than every preacher can say—that which I have endeavoured to practise throughout my life. (Cheers and laughter) The President went on to say that the American Pharmaceutical Association was now sitting at Detroit, and he proposed to send them the following cablegram: "Fraternal greetings from the British Pharmaceutical Conference met at Bath to the American Pharmaceutical Association, Detroit."

THE PAPERS.

The PRESIDENT then asked Mr. Martindale to submit the report on

THE UNOFFICIAL FORMULARY,

which report, he remarked, might be taken as a paper.

Mr. MARTINDALE said that the committee had added sixteen new formulæ to those contained in the first edition, and in the case of emulsion of cod-liver oil had substituted a new formula. A few minor alterations had also been made in a limited number of preparations. He proceeded to comment on the new formulæ and on the alterations, specially pointing out that the acetous preparations of ipecac, would be useful for children, and should not be prescribed with carbonate of ammonia.

The following are the new and altered formulæ now comprised in the Unofficial Formulary:—

ACETUM IPECACUANHÆ.

Vinegar of Ipecacuanha.

Take of

Ipecacuanha root, in No. 20 powder	..	1 oz.
Acetic acid	..	2 fl. oz.
Distilled water, a sufficient quantity		

Macerate the powder in 1 oz. of the acid for twenty-four hours, and then pack in a percolator. Mix the remainder of the acid with 10 oz. of distilled water, and percolate with the mixture, continuing the percolation with distilled water until 1 pint of the vinegar is obtained.

Dose.—5 to 40 minimæ as an expectorant.

ELIXIR PHOSPHORI.

Elixir of Phosphorus.

Take of

Compound tincture of phosphorus	..	4 fl. oz.
Glycerine	..	16 "

Add the tincture to the glycerine and shake well. This elixir should be preserved from the light. Each fluid drachm contains $\frac{1}{2}$ grain of phosphorus.

Dose.—5 to 10 minims.

ELIXIR SACCHARINI.

Elixir of Saccharin.

Take of

Saccharin *	..	480 grains
Bicarbonate of sodium	..	240
Rectified spirit	..	2½ fl. oz.
Distilled water, a sufficient quantity		

Rub the saccharin and bicarbonate of sodium in a mortar, with $\frac{1}{2}$ pint of distilled water gradually added. When dissolved add the spirit, filter, and wash the filter with sufficient distilled water to produce 1 pint of elixir.

Each fluid drachm contains 3 grains of saccharin.

Dose.—5 to 20 minims.

* Benzoyl-saliphonic-imide—a patent preparation.

EMULSIO OLEI MORRHUE (altered formula).

Emulsion of Cod-liver Oil.

Take of

Cod-liver oil	..	..	..	8 fl. oz.
The yolks of two eggs				
Tragacanth, in powder	..	..	..	16 grains
Elixir of saccharin	..	..	..	1 fl. drachm
Simple tincture of benzoin	..	..	..	1 "
Spirit of chloroform	..	..	..	4 "
Essential oil of bitter almonds *	..	..	..	8 minimæ
Distilled water, sufficient to produce				16 fl. oz.

Measure 5 fluid oz. of the distilled water, place the tragacanth in powder in a dry mortar and triturate with a little of the cod-liver oil; then add the yolks of eggs and stir briskly, adding water as the mixture thickens. When of a suitable consistency add the remainder of the oil and water alternately, with constant stirring, avoiding frothing. Transfer to a pint bottle, add the elixir of saccharin, tincture of benzoin, spirit of chloroform, and oil of almonds, previously mixed, shake well, and add distilled water if necessary, to make the product measure 16 fluid oz.

Dose.—2 to 8 fluid drachms.

EXTRACTUM TRITICI LIQUIDUM.

Liquid Extract of Triticum.

Take of

Triticum,† in No. 20 powder	..	..	10 oz.
Rectified spirit	} of each a sufficient quantity		

Moisten the powder with 4 fluid oz. of distilled water, pack in a percolator, and pour boiling distilled water upon it until it is exhausted. Evaporate the percolate to 15 fluid oz., add to it 5 fluid oz. of rectified spirit, mix, and set aside for forty-eight hours. Then filter the liquid, and add to the filtrate enough of a mixture composed of 3 fluid parts of distilled water and 1 of rectified spirit to make the liquid extract measure 1 pint.

Dose.—1 to 6 fluid drachms.

LIQUOR FERRI HYPOPHOSPHITIS FORTIS.

Strong Solution of Hypophosphite of Iron.

Take of

Sulphate of iron	..	..	760 grains.
Hypophosphite of barium	..	..	850 "
(Containing not less than 95 per cent.			
of ba. $(2\text{H}_2\text{O}_2\text{H}_2\text{O}_4)$			
Diluted sulphuric acid	..	..	100 minimæ.
Distilled water	..	..	1 pint.

Put the sulphate of iron with 5 fluid oz. of distilled water in a tall 24-oz. bottle, and shake till dissolved. Dissolve the hypophosphite of barium in the remaining 15 fluid oz. of distilled water, and add slowly to the former solution. Shake and add the diluted sulphuric acid: again shake and set aside for two days, then syphon off the clear liquid. Keep it in bottles quite full and in a dark place.

Each fluid drachm contains about 5 grains of hypophosphite of iron. The solution has an acid reaction, and it should not give more than a faint precipitate, if any, with either diluted sulphuric acid or solution of chloride of barium.

Dose.—10 to 30 minims.

LIQUOR HYPOPHOSPHITUM COMPOSITUS (altered formula).

Compound Solution of Hypophosphites.

Syn.—LIQUOR FERRI HYPOPHOSPHITIS COMPOSITUS.

Take of

Hypophosphite of calcium	..	..	320 grains.
"	..	..	330 "
"	..	..	160 "
Strong solution of hypophosphite of			
iron	..	..	6 fl. oz.
Hypophosphorous acid, 30 per cent.	$\frac{1}{2}$ "		
Distilled water, a sufficient quantity			

Dissolve the hypophosphites of calcium, sodium, and magnesium in 12 fluid oz. of distilled water; add the solution of hypophosphite of iron and the hypophosphorous acid. Filter, and make up to 1 pint by the addition of distilled water.

Each fluid drachm contains about 2 grains each of hypophosphite of sodium and calcium, 1 grain of hypophosphite of magnesium, and $\frac{1}{2}$ grain of hypophosphite of iron.

Dose.— $\frac{1}{2}$ to 2 fluid drachms.

* The oil distilled from the official bitter almond after the expression of the fixed oil.

† The rhizome of *Triticum repens*, Linné, gathered in the spring, and deprived of the rootlets.

LIQUOR PICIS CARBONIS (altered formula).

Solution of Coal Tar.

Take of

Quillaja bark,* in No. 20 powder	2 oz.
Rectified spirit, a sufficient quantity.	

Moisten the powder with a suitable quantity of the menstruum, and macerate for twenty-four hours in a closed vessel. Then pack in a percolator, and gradually pour rectified spirit upon it until 1 pint of percolate is obtained. To this add

Prepared coal tar	4 oz.
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Digest at a temperature of 130° F. for two days, allow to become cold, and decant or filter.

Syr. calcii, mangan. et potas. hypophos. is omitted.

SYRUPUS CODEINAE.

Syrup of Codeine.

Take of

Codeine, in powder	20 grains
Proof spirit	1 1/4 fl. oz.
Distilled water	1 1/4 "
Dissolve, and add	

Syrup, sufficient to produce	1 pint
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Dose.— $\frac{1}{2}$ to 2 fluid drachms.

SYRUPUS FERRI BROMIDI.

Syrup of Bromide of Iron.

Take of

Iron wire, free from oxide	1/2 oz.
Bromine	533 grains
Refined sugar	14 oz.
Distilled water, a sufficient quantity.	

Dissolve the sugar in 6 oz. of distilled water, by the heat of a water-bath. Put the iron wire with 4 oz. of distilled water into a glass flask, giving a capacity of at least 1 pint, and surround it with cold water. Then add the bromine in successive quantities; shake occasionally until the salt becomes white, and the reaction is complete. Filter the solution into a warm syrup, and add, if necessary, distilled water sufficient to produce 1 pint.

Each fluid drachm contains about 4 1/2 grains of bromide of iron.

Dose.— $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS FERRI HYPOPHOSPHITIS (altered formula).

Syrup of Hypophosphite of Iron.

Take of

Strong solution of hypophosphite of iron ..	4 fl. oz.
Syrup	16 "

Mix.

Each fluid drachm contains about 1 grain of hypophosphite of iron. Dose.— $\frac{1}{2}$ to 2 fluid drachms.

SYRUPUS FERRI ET QUININÆ HYDROBROMATUM.

Syrup of the Hydrobromates of Iron and Quinine.

Syn.—SYRUPUS FERRI BROMIDI CUM QUININÆ.

Take of

Acid hydrobromate of quinine	160 grains
Diluted hydrobromic acid	1 fl. oz.
Distilled water	1 "

Mix the diluted hydrobromic acid with the distilled water, and in the mixture dissolve the acid hydrobromate of quinine.

Then add

Syrup of bromide of iron, sufficient to produce 1 pint.

Each fluid drachm contains 1 grain of acid hydrobromate of quinine, and about 4 grains of bromide of iron.

Dose.— $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS FERRI QUININÆ ET STRYCHNINÆ HYDROBROMATUM.

Syrup of the Hydrobromates of Iron, Quinine, and Strychnine.

Syn.—SYRUPUS FERRI BROMIDI CUM QUININÆ ET STRYCHNINÆ.

Take of

Strychnine, in powder	2 1/2 grains
Acid hydrobromate of quinine	160 "
Diluted hydrobromic acid	1 fl. oz.
Distilled water	1 "

Mix the diluted hydrobromic acid with the distilled water, and in the

* *Quillaja saponaria*, Molina.

mixture dissolve the strychnine and acid hydrobromate of quinine, by the aid of a gentle heat.

Then add

Syrup of bromide of iron, sufficient to produce 1 pint.

Each fluid drachm contains $\frac{1}{4}$ grain of strychnine, 1 grain of acid hydrobromate of quinine, and about 4 grains of bromide of iron.

Dose.— $\frac{1}{2}$ to 1 fluid drachm.

SYRUPUS HYPOPHOSPHITUM COMPOSITUS (altered formula).

Compound Syrup of Hypophosphites.

Take of

Quinine (alkaloid)	20 grains
Strychnine	1 "
Hypophosphorous acid, 30 per cent. ..	2 fl. drms.
Strong solution of hypophosphite of iron ..	3 fl. oz.

Dissolve, and add

Hypophosphite of calcium	80 grains
" of manganese	40 "
" of potassium	40 "

Dissolve, filter, and add

Syrup, sufficient to produce	1 pint.
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Mix.

Each fluid drachm contains $\frac{1}{20}$ grain of strychnine and $\frac{1}{3}$ grain of quinine.

Dose.— $\frac{1}{2}$ to 2 fluid drachms.

SYRUPUS IPECACUANHÆ ACETICUS.

Acetic Syrup of Ipecacuanha.

Take of

Vinegar of ipecacuanha	1 pint
Refined sugar	2 1/2 lbs.

Dissolve by the aid of a gentle heat. Specific gravity about 1.33.

Dose.— $\frac{1}{4}$ to 2 fluid drachms.

SYRUPUS PRUNI VIRGINIANÆ.

Syrup of Wild Cherry.

Take of

Wild cherry bark,* in powder No. 20 ..	3 oz.
Refined sugar, in coarse powder	15 "
Glycerine	1 1/4 fluid oz.
Distilled water, a sufficient quantity.	

Moisten the powder with distilled water and macerate for twenty-four hours in a closed vessel, then pack it in a percolator and gradually pour distilled water upon it until 9 fluid oz. of percolate are obtained. Dissolve the sugar in the liquid by agitation, without heat, add the glycerine, strain, and, if necessary, pour sufficient distilled water over the strainer to produce 1 pint of syrup.

Dose.— $\frac{1}{2}$ to 2 fluid drachms.

TINCTURA CALENDULÆ FLORUM.

Tincture of Marigold Flowers.

Take of

Marigold flowers,† dried, in No. 20 powder ..	4 oz.
Proof spirit, a sufficient quantity	

Moisten the powder with 8 fluid oz. of the menstruum and macerate for twenty-four hours. Then pack in a percolator and gradually pour proof spirit upon it until 1 pint of tincture is obtained.

Dose.—5 to 20 minimis.

TINCTURA CAPSICI FORTIOR.

Stronger Tincture of Capsicum.

Take of

Capsicum fruit, in No. 40 powder	10 oz.
Rectified spirit, a sufficient quantity	

Moisten the powder with a suitable quantity of the menstruum and macerate for twenty-four hours in a closed vessel. Then pack in a percolator and gradually pour rectified spirit upon it until 1 1/2 pint of tincture is obtained.

Dose.—1 to 3 minimis. Principally used externally.

TINCTURA EUONYMI.

Tincture of Euonymus.

Take of

Euonymus bark,* in No. 20 powder	4 oz.
Rectified spirit	1 pint

Moisten the powder with a suitable quantity of the menstruum and macerate for twenty-four hours. Then pack in a percolator and gradually pour rectified spirit upon it until 1 pint of tincture is obtained.

Dose.—10 to 40 minimis.

* *Prunus Serotina*, Elsholtz. The bark collected in autumn.

† The florets of *Calendula officinalis*, Linne.

‡ The bark of *Euonymus atropurpureus*, Jacquin.

TINCTURA IODI DECOLORATA.—*Decolourised Tincture of Iodine.* The preparation, if not diluted with the pint of spirit, may be prescribed as *Tinctura Iodi Decolorata Fortior*; the formula however, remains unaltered.

TINCTURA PHOSPHORI COMPOSITA.

Compound Tincture of Phosphorus.

Take of					
Phosphorus	..	..	..	..	12 grains
Chloroform	..	..	..	..	2½ fl. oz.

Place in a stoppered bottle, and apply the heat of a water-bath until dissolved. Then add the solution to

Ethylic alcohol	12½ fl. oz.
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Shake well. This tincture should be preserved from the light, in accurately stoppered bottles.

Each fluid drachm contains $\frac{1}{16}$ grain of phosphorus.

Dose.—3 to 12 minims.

UNGENTUM OLEO-RESINÆ CAPSICI.

Ointment of Oleo-Resin of Capsicum.

Take of					
Oleo-resin of capsicum	..	..	..	..	1 oz.
Yellow wax	..	..	..	..	½ "
Benzooated lard	..	..	..	..	4 "

Melt the wax and lard at a low temperature, add the oleo-resin, mix thoroughly, and, if necessary, strain through muslin. Stir until cold.

The PRESIDENT said he had great pleasure in moving that the report be adopted and published. He might mention that last year they had sold 2,250 members—(laughter)—he meant 2,250 copies of the Formulary. (Cheers.)

Mr. R. ROBINSON (London) seconded the motion. Last year they had some new and improved formulae presented to their use, and although he had then some doubt of the practicability of the scheme, he could say that after a year's experience he had none now. He expressed the hope that in future, when the Medical Council wanted another Pharmacopeia, they would look to the Formulary Committee of that Conference for help in preparing it. (Hear, hear.) Not only had the Formulary Committee done good work, but it had brought in a profit, and that was a convincing proof of the excellence of the scheme.

The resolution was carried.

Mr. SYDNEY PLOWMAN then moved a special vote of thanks to the Formulary Committee for their report, as well as for the additions to the Unofficial Formulary. He thought everyone was struck by the admirable character of the work the committee had done, and, as a member of the Executive Committee, he had had an opportunity of glancing through the additions made to it, and they maintained the high standard of last year's report. He need not further praise the work. The fact that 2,250 copies were sold, and that there was almost an entire absence of adverse criticism on the result of the committee's work, showed the splendid character of their labours. He was told on all sides that the demand was increasing for preparations made according to the B.P.C. Formulary, and he was convinced that medical men would more and more avail themselves of the opportunities to prescribe preparations which had the approbation of such a number of distinguished men as were on the Formulary Committee. He thought the formulae would be more and more recognised on all sides, and in process of time custom would make it practically binding on pharmacists, until most of the formulae appeared in their national Pharmacopœia. Every member of the committee was deserving of the highest praise for his self-denying and self-sacrificing labours, and special thanks were due to Mr. Martindale—(cheers)—who had conducted the business, and to the secretary, Mr. W. A. H. Naylor. (Cheers.)

Mr. A. H. MASON seconded the motion. He should like to say that it had been his privilege lately to view the work of the committee from another side of the world, and from a portion of the world where, if the early training of pharmacists was not so satisfactory as it might be, certainly there were men who were to the front in questions of this kind.

* Oleo-resin of capsicum (United States Pharmacopœia). It is prepared by exhausting capsicum fruit by percolation with ether, distilling off the ether, and pouring the liquid portion of the remainder on a strainer, in order to separate and reject the fatty matter.

In America they were the first to have a committee of the Pharmaceutical Association to undertake this work, and it was with very great pleasure he saw that so important a work was to be carried on by this Conference. The gentlemen who composed the committee were, if he might say so, giants in pharmacy in this country, and they were all indebted to them for their labours. (Applause.)

The resolution was carried by acclamation.

Mr. MARTINDALE, in replying, thanked the members for the kind way in which they had received the report. It had been a work of considerable labour. They had had to carry on a good deal of correspondence, and country members had sacrificed a great deal of time in coming up to London. The principal difficulty was that the members of the committee were so far apart. They had not produced the amount of work that had been produced by the American Formulary Committee; they were not so ambitious as the Americans, who had produced some 400 formulae; but they might produce a few more gradually. The committee went modestly to work—(laughter)—and he was glad their efforts had been appreciated.

Mr. NAYLOR was also called on to reply. He said the committee highly appreciated the vote of thanks. It would be mere affectation on his part to say that the duties of secretary were light. They had involved a considerable amount of labour, but he could say honestly it had been a labour of love. (Cheers.)

REPORT ON THE CULTIVATION OF ACONITUM NAPELLUS.

By E. M. Holmes, F.L.S.

After describing the origin of this investigation, which was undertaken at the request of the Conference, the author of this paper stated that he had received from Mr. J. C. Shenstone, of Colchester, a small collection of fairly typical plants of *A. Napellus*, and from Mr. P. W. Squire $\frac{1}{2}$ cwt. of the roots of a form of the species which he cultivates at St. Neot's. These, with a specimen which the author found growing in a garden at Riverhead, near Sevenoaks, were cultivated in the author's own garden, the soil of which is ferruginous sand, to which some chalk has been added. All these plants were the nearest approachable to the type of the species which De Candolle has described; but the plant is very liable to hybridisation with such species as *A. variegatum* and *A. pedunculatum*. Six years ago Mr. Holmes, in cultivating twenty species of aconite, discovered that *A. Napellus* could be distinguished from other species or hybrids while it was in the young state, that is, when the stem was about six to eight inches high. In this state the leaves of *A. Napellus* appear as a dense tuft, the segments of the leaves being spreading and drooping at the ends. In *A. variegatum* and *A. paniculatum*, &c., the leaves when young are rigid, and the segments are close together and in one plane, and do not form a tuft. These characters are lost as the plants grow older, and this the author showed by submitting a number of herbarium and fresh specimens. Under cultivation the plants were not in a favourable condition last year owing to the dryness of the season, but in May of this summer the Colchester plants were found to have pale-green leaves, and the St. Neot's ones leaves of a darker green colour, with a purplish tint on the petioles, the latter resembling in some respect the leaves of some plants of *A. paniculatum* which were under cultivation at the same place. The author then proceeded to describe the appearance of the plants as they grew older, and it was found that when they reached the flowering stage the St. Neot's plants had a flower with a slightly prominent beak, which is found in *A. rostratum*, while some of the Colchester plants were discovered to have a close resemblance in leaf shape to *A. variegatum*. In inflorescence the three kinds also differed from each other in small details, the Riverhead plants being the closest to the typical description of Dr. Candolle. The latter plants also yielded large and well-developed roots. The specimen of *A. paniculatum* grew to a height of 6 feet, had a well-marked panicled inflorescence, and the carpels of the fruit did not exceed three, whereas the *A. Napellus* grew to a height of 3 feet only, the inflorescence was merely indistinctly panicled, and the carpels numbered four and sometimes five.

To judge of the strength of the plants the author selected

seeds of equal size and development from each kind. These he tasted, with the following results:—

Colchester Seed.—Tingling and numbness of the tongue in five minutes. Duration of the sensation: 1 hour 10 minutes.

St. Neot's Seed.—Tingling and numbness in five minutes, duration, $1\frac{1}{2}$ hour; but the numbness less pronounced.

Riverhead Seed.—Tingling and numbness, 4 minutes: duration, 1 hour 5 minutes.

It is quite possible that the soil may have an effect in inducing differences.

From this the author proceeded to comment upon the yield of roots by the different plants.

In the majority of cases the flowering plant had two lateral roots attached; in a few plants three or even more were present, but in these cases the extra roots were developed from axillary stem buds, and were not on the same level as the original root. The shape and size of the new roots varied considerably according to age. The young roots appear to first develop as lateral buds, which send downwards a single or rarely a forked root. Sometimes also one or more of the rootlets of the new growth develops in a conical form and so gives a forked or triple character to the root. In robust plants the new root is obovate in shape, sometimes at first tapering suddenly into a main rootlet. The lower part of the root, however, soon swells, so as to obliterate the contraction, and the root becomes long and tapering and fleshy throughout like a radish. The old root in August is usually much smaller than the new root, but not shrivelled when fresh. Several of the larger roots were weighed, and the average weight with the rootlets was found to vary between $1\frac{1}{4}$ and $1\frac{3}{4}$ oz., or without rootlets between $\frac{3}{4}$ and $1\frac{1}{4}$ oz. Allowing for loss in drying, this would give about $\frac{1}{4}$ to $\frac{1}{2}$ oz. as the weight of each root, so that it would take about fifty plants to yield 1 lb. of dried root.

As each plant normally produces two new roots, the amount grown might be expected to be doubled each year.

In a future paper the author hopes to state the best time for collecting the root, and Mr. P. W. Squire is also working in this direction.

The rootlets are not devoid of activity, judging from the tingling and numbness produced on chewing a piece. The soil in which the plants appear to succeed best is a rich mould capable of retaining moisture, but not too clayey, and containing a little lime.

In concluding, Mr. Holmes suggested that the plant could best be propagated by division of the roots as soon as the fruit has ripened, and as there would be no object in retaining the flowers and seeds where once the typical character of the plant is ascertained, it would probably add to the vigour of the roots if the flowering axis were not allowed to develop. His experience in cultivating the plant from seed had not been favourable. Only a few plants germinated from a parcel of seed sown last spring, and these were eaten off by insects or slugs before three leaves had developed. Seedlings are also very rare in gardens where plenty of seed is produced.

At the close of the paper Mr. Holmes exhibited some specimens of plants from his garden, which were much larger than those grown wild, but no doubt some of the increase was due to the wet weather which had recently prevailed. The specimens were elecampane, wormwood, *Lactuca verosa*, and motherwort, all about 8 feet high. The last named was formerly used as a stimulant of the heart, but was not much in use now. He believed it was exported to a certain extent.

The PRESIDENT thanked Mr. Holmes for his paper, which was the result of a desire to remove a confusion which existed at present in regard to the source of aconite root of commerce. They were also obliged to Mr. Holmes for the exhibition of the vegetable giants. It was satisfactory to find that the wet season had been productive of some good. (Laughter.)

Professor HILLHOUSE (Birmingham) said that, as a botanist and physiologist, he took some interest in this subject, although the conclusion to which the report would ultimately lead was perhaps foreign to his own likings. He should like to express his feeling of satisfaction that something had been done with this very troublesome plant. He had *Aconitum Napellus* growing under his care in three different

places, and he was quite sure that he had at least three different forms of it, and had been much worried as to which was the true one. He had referred to all sorts of books, and had found that all sorts of books did not agree—(laughter)—so if anything satisfactory could be got out of Mr. Holmes's experiments it would remove one serious tribulation which had affected him during the last few years. He could hardly think that the method of testing the action of the seed upon the tongue was likely to be a particularly satisfactory one. The seeds were not, as far as his experience of seeds went, so invariably constituted as Mr. Holmes would appear to think. Assuming even that the seeds were ripe, and that they were taken from the same plant, he thought there would be considerable difference between them upon a test of that kind. The vast majority of the seeds were not fertilised at all, and there would be a difference between the fertilised and the sterile ones. In the intervals of the earthquake going on below here—(laughter, the reference being to mysterious rumbling noises in adjoining rooms)—he had some difficulty in following Mr. Holmes's figures, but he gathered that in the case of the three plants there was a progressive rapidity in the commencement of the tingling, and a progressive elongation in the periods—was that so?

Mr. HOLMES: Not quite.

Professor HILLHOUSE: I must blame the earthquake. (Laughter.) But apart from what the results might be, he should theoretically assume that a second seed taken after a first even of similar strength would produce these results more quickly, and the effects would continue longer; and a third taken after a relatively short interval would again operate more quickly, and for a more lengthened period. He would offer that to Mr. Holmes for his consideration hereafter. He should like to have some information on another point—with regard to the utilisation of rootlets. The soil of St. Neot's, which he used to know, was a somewhat strong alluvium. It was in the river valley of the Ouse, and close by there was a considerable amount of boulder clay. The difference between the soil in which Mr. Holmes had grown his plants and the soil at St. Neot's would account for a considerable difference in the roots of the plants. In a sandy soil the plant would tend more strongly to throw out rootlets than it would in a heavier one, and probably Mr. Squire's plants were not so affected with the lesser kind of rootlets as they would be if grown in a sandier soil. He might be allowed to emphasise most strongly the hint which Mr. Holmes threw out at the close of his report as to the wisdom of counteracting the flowers. If they wished in any way to concentrate energy in the root, by all means stop the flowering, and at the earliest possible moment, directly the flower-buds appear. In that way there would be, he believed, a considerable intensification of the strength of any product the root might produce. He should be glad to get a true type specimen of *Napellus*, so that he could replace his own three different varieties by it.

Mr. N. H. MARTIN (Newcastle) said he should have liked to have heard the result of the experiments with wild grown aconite, seeing that the roots they used were collected from wild plants. It would be important to bear in mind that they wanted to have those roots uniform and authenticate wild-grown specimens. In Switzerland, in the Alpine district, one saw the plant growing frequently in isolated positions on the mountain-side, and having very clustered roots. That seemed to be the form which came into English commerce. It seemed to have been propagated from roots.

Mr. F. RANSOM (Hitchin) said he was in Switzerland some short time ago, and noticed some plants that were in the valley beside a stream. On one or two occasions he tested them, and they all produced a tingling sensation very speedily, which sensation was prolonged to a greater extent than was the case with cultivated plants. He had quite failed to propagate plants from seeds.

Mr. T. B. GROVES (Weymouth) said his attention to aconite had been confined to its chemistry, and he had found the results obtained from various specimens differed greatly. He had not been able to obtain the same results from any two specimens, and therefore it occurred to him that probably that circumstance was due to the employment of various forms of *A. Napellus*. The great difficulty in his opinion with regard to aconite was that occasionally roots gave an inert

alkaloid, which very closely resembled, in its chemical characteristics and its crystalline form, the active variety. Mr. Cleaver had attributed this to the root of *A. paniculatum*. He thought he had read some few months ago that a German investigator had found out a means of converting the active into the inert variety by the action of heat and water. That, of course, would have to be looked into, but the difficulty at present was to insure that the aconitine obtained from the plant was of a definite character.

Mr. PLOWMAN, who complained that the "earthquake" had also disturbed him, asked whether Mr. Holmes had tested the various parts of the *Aconitum paniculatum* cultivated by himself, and whether his result corroborated that of Mr. Glover. He quite agreed with Professor Hillhouse as to the fallaciousness of the test of the tongue. Of course it would be a valuable test if *Aconitum parvifolium* contained no aconitine, as Mr. Groves had said. At the same time, he must say the Conference was to be congratulated on having such a good return for its outlay as Mr. Holmes had given them. It was a first-rate report, and it was work such as members of the Conference could take up. Hitherto they had not been certain of the material that had been used, and he hailed with great satisfaction these experiments. He thought it was very probable that in years to come they would have something perfectly definite about aconitine.

Mr. THOMAS GREENISH said that the aconite imported into this country, and generally called "German aconite," was obtained from that range of mountains running from Bohemia through Salzburg, named the Giant Mountains. The method of collecting it was somewhat loose. A man went out and dug up roots of different kinds, threw them into one receptacle, and carried them home, where he sorted them merely by eyesight. Naturally, there would occasionally be a slip. (Laughter.) There was one important point in connection with Mr. Holmes's paper—the influence of cultivation on aconite and belladonna. He thought it had been proved that the aconite collected in mountainous districts was much stronger and gave more active principle than the less cultivated roots; and he hoped that at no distant period their research laboratory would determine two or three points—with regard, for instance, to aconite collected in mountainous districts, and that subjected to cultivation; and, with regard to belladonna, whether the active principle resided in the leaves for the most part, or in the root. (Hear, hear.)

Mr. HOLMES, in reply, agreed with Professor Hillhouse that the seeds were very often unfertilised, but he explained that he first of all emptied all the seeds into a vessel, and then picked out one as nearly as possible alike in size from each variety. He tested the seeds because the plants varied in height and robustness, and if he had chosen the leaf or some other portion he could not have drawn so near a comparison. He tested the roots as well, but simply used the seeds for the purpose of comparison. But he was quite sure the roots were equally pungent. He might mention, with regard to removing the flowers, that in Banbury, where rhubarb was cultivated to a great extent, they had removed the flowers for a similar reason, and as a matter of fact the plants ceased to flower. He had no doubt a similar result would occur in the case of aconite if the flowers were removed year by year. So far as variation in strength of individual plants was concerned, he was sure nothing could be done to alter that. Of course, if they could get soil and climate as nearly as possible like the natural ones, they might expect to get plants of similar strength to the wild ones. In his garden belladonna grew to a very small extent only, and it was obvious the conditions of the soil were unsuitable; but there were some plants that the soil suited admirably. They could not depend on the wild roots they got, and if they could obtain a variety of the plant which would present definite characteristics and be easily recognised, they would be able to cultivate a form which would be as nearly uniform as they could get it. Mr. Greenish had said that it would be well to compare the wild with the cultivated. An investigation of the wild aconite gathered from the Pyrenees had been made by a French chemist—Duquesnel. As to the cultivated variety being weaker in strength than the wild, he had replied that that would depend on the conditions under which the cultivation took place, and it would be far more advantageous to have a definite cultivated form than an indefinite wild one. He should be happy to place the *Aconitum paniculatum* at Mr. Plowman's service, to be tested as much as he required.

(Cheers) He had found that it did not produce the tingling.

The meeting then adjourned for luncheon.

On reassembling the PRESIDENT announced the names of the following delegates:—Midland Counties Chemists' Association: Messrs. Perry, Thompson, Alcock, and Barclay.

Mr. DOTT then read a paper on

THE CHEMISTRY AND PHARMACOLOGY OF SOME OF THE MORPHINE DERIVATIVES.

By D. B. DOTT, F.R.S.E., and Ralph Stockman, M.D.

The authors have continued their research on these bodies so far as time would permit. Acetylmorphine prepared by the action of glacial acetic acid on morphine was described at last Conference meeting. Diacetylmorphine formed by the action of acetic anhydride on anhydrous morphine is now described. It has the same physiological action as the mono-acetyl derivative, but rather more powerfully exerted, especially in regard to its tetanising qualities. Benzoylmorphine was formed by the inter-action of morphine-soda and benzoyl chloride. It has properties identical with acetylmorphine. Dibenzoylmorphine was prepared by the action of benzoyl chloride on anhydrous morphine in a sealed tube. Its action is difficult to investigate, on account of its sparing solubility and ready decomposability; but it seems to have the same physiological properties as the benzoylmorphine. Amylmorphine prepared in the same manner as ethylmorphine was found to have, as might be expected, the same action. The morphine-sulphuric acid of Stolnikow, in which the radical HSO_4 replaces OH in the morphine molecule, was formed by the action of morphine-soda on potassium pyrosulphate. The results obtained do not entirely confirm Stolnikow's observations, as the new body was found to have very much the same physiological effects as morphine, although certainly in a subdued degree. Chloro-codide was prepared by the process described by Wright, but a pure substance could not be obtained in that way. It was ultimately prepared by the action of phosphorus pentachloride and oxychloride on codeine, according to the method of Gerichten. Chlorine substitution compounds are obtained in the same way from morphine. These have not yet been sufficiently investigated, but they are expected to yield interesting results from a pharmacological point of view.

The PRESIDENT tendered the thanks of the Conference to the authors of the paper. It was, he said, interesting as the joint production of a pharmacist and a medical man, and it was possible members of that Conference might, more frequently with advantage to their inquiries obtain the co-operation of the medical profession in such investigations.

Dr. THRESH said it was a very difficult matter for men unacquainted with medicine strictly to realise the importance of investigations of that character. Apparently they were dry and uninteresting, whereas practically their importance could scarcely be over-estimated, and it was only by the efforts of chemists, physiologists, and the clinical experience of physicians they could hope to obtain a scientific foundation for the treatment of disease by the aid of medicine. At present it was almost purely empirical, but a foundation was being laid by numerous investigators for the scientific treatment of disease. It was a thing to be proud of the Pharmaceutical Conference was producing men who capable of working with physiologists and helping to bring about this consummation so devoutly to be wished. (Cheers.)

Mr. PLOWMAN said the paper was beyond criticism. It was full of practical experiment, and they accepted without hesitation the results that had been attained by such workers as Mr. Dott and Dr. Stockman. He would endorse what had been said by Dr. Thresh, that this was the direction in which they must work. He could not agree with Dr. Thresh that the treatment of disease was solely empirical; he thought they had some traces of scientific therapeutics, but at present it was mainly empirical, and it was only by investigations of that kind and by careful physiological experiments with new drugs that they could hope to get an approach to scientific therapeutics, which was the branch of medicine most practical of all.

Mr. DOTT, in reply, said that besides the experiments referred to in the paper, they had carried out a number on the derivatives of narcotine and other opium alkaloids, but they were not sufficiently satisfied with the purity of the materials to publish their results. Contrary to the generally received opinion, there was not that marked difference between the different opium alkaloids that was generally told. The resemblance between the various alkaloids was very close, being somewhat like that between the cinchona alkaloids.

The PRESIDENT thought the Conference would express his hope that these experiments of Mr. Dott and Dr. Stockman would be continued.

EXTRACTION BY PRESSURE.

By Charles Symes, Ph.D.

In these days of percolation and repercolation it may seem somewhat antiquated, or, as our American friends would say, in attempt at resurrecting, to appear as an advocate of extraction by pressure.

Certain is it, however, that our earliest acquaintance with the nature and properties of drugs was obtained by the administration of either the crude material in powder or the essence, extract, or juice obtained by pressure. That chemistry and the more exact methods in practical pharmacy have done much to enable us to separate the active constituents and proximate principles of plants in convenient forms; that rude and uncertain methods have been rendered more refined and exact, no one will, I think, deny. But there are members of the medical profession who, doubtless with good reasons, believe that they can obtain therapeutic results from the whole of the constituents of a drug as produced and combined in Nature's laboratory, which are unobtainable from any of those constituents when administered alone. Hence fluid extracts, or valoids, have during the last few years become largely used, and methods for extraction in a concentrated form, more particularly by the use of the percolator, have received considerable attention. We should scarcely like to see pharmacy take a retrograde step, even to the extent of fifty years: but in our rapid march of progress we are tempted to ignore or overlook the more simple means of accomplishing our object, even though the results obtainable are quite equal to those produced by the more elaborate methods.

If we take a herb or crude drug of a succulent nature and submit it to careful and efficient pressure, we separate in the form of juice the greater part of the activity of the plant in an unaltered condition, mixed probably with some matter not or contributing to its instability; but these are readily removed, and its preservation is a simple matter. There are, however, difficulties attendant on the use of drugs in a fresh state, such as that of transit in quantity, and for any distance, without fermentation or incipient change of some kind, hence drying is very generally adopted as a means of preservation. Many drugs can be dried without detriment, whilst others lose much of their activity. A bark recently received from the West Coast of Africa, and which, when fresh, if applied to the skin to possess all the beneficent effects of a strong mustard plaster, possessed no such properties when it arrived here in a dry condition. There is a tree growing in the neighbourhood of Rio Grande do Sul, South Brazil, which possesses the power of acting in a poisonous manner and of causing considerable swelling of the whole bodies of persons passing under or very near it, but which loses that power when dry. But when a drug retains its activity after drying, as it does in many instances, the most simple method of obtaining its properties in a concentrated form appears to be the restoration of moisture and subsequent expression. This treatment is specially adapted to leaves, of which senna may be taken as the type. Here we have a bulky material to deal with, and percolation and evaporation be the means adopted, there can be no doubt but that the active principle becomes injured. Other examples may be found in convallaria majalis, damiana, and hamamelis.

As matter of experience, I may mention that a customer who for some time had been taking a mixture consisting chiefly of essence of senna, prepared by percolation and evaporation, became alarmed at the effect when the

prescription was dispensed with an essence bearing the same relation to the crude drug, but which had been prepared by pressure. A medical man who had been accustomed to take 40 minims of fluid extract of convallaria majalis, which had been prepared by percolation and evaporation, was compelled to reduce the dose, having suffered considerable nausea and other unpleasant effects from the same quantity of fluid extract prepared by pressure.

These instances are not adduced with a view to supporting an argument against percolation—in fact, I use it for extracting such substances as cinchona, cito, cascara sagrada, berberis, aquifolia, &c., with very satisfactory results.

For pressure the menstruum and mode of procedure will vary somewhat, according to the nature of the substance operated on. In the case of senna leaves for fluid extracts, to each pound is added 16 fluid oz of a mixture of equal parts rectified spirit and water, placed in a covered vessel for from four to six hours, then put in bags and subjected to hydraulic pressure of, say, 50 tons or more, until it ceases to yield any liquid. The marc is then broken up and moistened with water (which becomes readily absorbed), and again submitted to pressure. The latter treatment is repeated, and the result should be 16 oz of fluid, which has permeated and been forced through the vegetable tissue acted on, representing in an unaltered condition as nearly as possible in power the activity of 1 lb. of senna. The press which I use gives a maximum pressure of 70 tons, and has a large table or pressing-surface available for various purposes. It is adapted to the preparation of fluid extracts by the addition of a movable block, faced with a thick wrought-iron plate, a similar plate being placed in the tray, or pressing-box, on the table, which thus provides efficient draughtage. The oil-press of Messrs. Tangye & Co. is a good one for pharmaceutical purposes; it has a ram of 10 inches diameter, gives a maximum of 150 tons pressure, and is moderate in price.

The pharmaceutical hydraulic press made by R. Dudgeon, of New York, is the most compact, the pump cylinder being made to surround that containing the ram. It only gives, however, a pressure of 10 tons, and I have no personal experience of its working. An illustration of it is given on page 225 of Remington's "Practice of Pharmacy."

The PRESIDENT having thanked Dr. Symes for his paper,

Mr. MICHAEL CONROY (Liverpool) said he had had considerable experience in making fluid extracts by maceration and pressure, and the results had been better, he thought, in most cases than those obtained by percolation. At the same time he did not know that it was suitable for all substances. They found out by experience where maceration and pressure was better than percolation. He might mention the case of senna. He had made a fluid extract of that in large quantity by the process of Dr. Symes with the exception of the second part—the use of spirit and water. His experience of that article was that water maceration would not do in very many cases. He might mention another, viz., buchu, which contained a great deal of mucilaginous matter, and there were a great many like it, which required special treatment.

Mr. W. A. H. NAYLOR observed that, as a practical pharmacist, he had had a good deal to do with the preparation of pharmaceutical products. He gathered from the paper that Dr. Symes did not recommend pressure in general, but that discretion must be used, based upon their experience. The objection—if objection it were—which he had to this method of pressure was that he knew of very few leaves, if any, which were capable of being exhausted by using so small an amount of menstruum as Dr. Symes had represented. When they came to deal with plants which contained a considerable amount of resinous principle, there again there was difficulty of extraction, and he did not think Dr. Symes's process would answer very well unless it was supplemented by some amount of evaporation, such as was recommended in the latter part of the process for the preparation of fluid extracts by the United States Pharmacopœia. As a whole, he rather favoured, as a general method, combined maceration and percolation, and evaporation at very low temperatures.

Mr. T. H. WILLIAMS (London) spoke in favour of the pressure process with weak spirit in the preparation of essence of ginger, as it was much quicker than percolation. The method of putting it in the hydraulic press was rather

troublesome. He had tried on a small scale maceration and pressure by using one of Burroughs's "Enterprise" presses. The time required for maceration was remarkably short, and with the press maceration could go on at one end and exhaustion at the other. In using the hydraulic press they get a good a result by giving just sufficient time to absorb the spirit.

Mr. A. W. GERRARD thought the amount of fluid spoken of by Dr. Symes would not be sufficient for the extraction of such things as senna. Dr. Symes said he used a large quantity of rectified spirit with the water in exhausting his senna. Of course, if that were the case, that did away with the objectionable feature produced by the mucilage. The presses generally used in pharmaceutical establishments, constructed on a small scale, were mechanically very much at fault. Very often the outer part of a subs'ance was deprived of its moisture while the inner part still retained much fluid. Some improvement in the press was wanted, so as to allow the liquid in the interior to escape.

Mr. GROVES said that for many years he had employed the process of making essence of senna described by Dr. Symes, and he found the best proportion of spirit was one-fourth, that was, 1 of spirit and 3 of water, and there was no difficulty with regard to mucilage. But in applying that process one must face the necessity of wasting a certain amount of material. In using it he knew perfectly well he would throw away one-fourth of his senna: but what he lost in quantity he gained in quality—in fact, his customers sometimes complained that he put jalap in his senna. (Laughter.) No doubt evaporation was highly injurious to senna. He had a strong objection to attempting exhaustion in any case. He found the further they went the worse they got in percolation; and when, in addition to that, they exposed it for hours to evaporation, they made it still worse.

Mr. RANSOM agreed that pressure might advantageously be used in many cases where it was not used at present. As an instance he mentioned belladonna liniment, which could be produced by strong hydraulic pressure much more economically than by percolation. In quantities which were too small for hydraulic pressure percolation might answer best, but where there was sufficient quantity for the press he thought it was desirable to use it.

Mr. MARTIN asked whether Dr. Symes had made two preparations from the same sample of senna—one by percolation, and one by pressure; and whether the results differed.

Mr. PLOWMAN wished to emphasise that question; also to ask Dr. Symes about the tree in South America which was capable of producing swelling all over the body of those who went under or near it. It reminded him of the exploded story of the upas tree. He should like to know the name of the tree, its natural order, and what were the sources of Dr. Symes's information. (Laughter.) If there were such a tree it was worth a journey to South America to investigate it on the spot. (Laughter.)

Mr. HOLMES said that there were several trees belonging to the order Anacardiacee which possessed the properties Dr. Symes had alluded to, and which affected some people more powerfully than others. He had no doubt the trees mentioned by Dr. Symes belonged to that family.

Dr. THRESH was afraid that from the effects produced this mode of extraction caused the introduction of something into the preparation which was not wanted.

Mr. MARTINDALE said the difficulty of using this method was that they could not keep the press clean. He was in favour of it otherwise.

Dr. SYMES, in reply, said he found in putting 16 oz. of fluid to 1 lb. of senna, composed of equal parts of spirits and water, and pressing it, he would only in the first instance get about 8 oz. of fluid. It was obvious, then, that there were still 4 oz. of spirit in the senna, and, for that reason, he would add water. If more water were added to the senna there would be a certain amount of mucilaginous substance, but as a matter of experience they did not find that interfered with their getting very satisfactory results, and in the finished product they would lose some spirit. The same sample of senna was used for percolation and evaporation, and for pressure. In the case of convallaria it was not so. So marked was the result in the case of the senna that the patient who had taken it came to him in a confidential sort of way and said, "I would like to speak to you privately." He replied, "I have no place to speak to people privately."

His impression was that the patient wanted him to prescribe for him. (Loud laughter.) The patient then told him that he thought his assistant had made a mistake in the medicine, which had made him very ill; whereas the cause was the alteration in the preparation of the medicine, and the increase of strength from the use of pressure. If they got an essence by one process producing double the effect of that produced by another, they had doubled the activity of the medicine, and in dispensing he had to reduce his essence of senna to half its strength. He made several experiments with convallaria before he could satisfy the medical man, who was also the patient, that his preparation was a good one. He explained to him that heat injured the substance, and the patient argued in reply that tea was not injured by heat. But when the patient reduced the dose he got the same effect which he had previously obtained by a smaller dose. With regard to the tree about which Mr. PLOWMAN had asked, the information was obtained from Dr. Landell, a member of this Conference, a medical man in active practice in Rio Grande. Dr. Landell had stated that he had been called in to prescribe for persons who had passed under or near this tree, some of whom were very much swollen, and being a member of that Conference they would have no reason to doubt Dr. Landell's word, he was sure. (Hear, hear, and laughter.) He could scarcely venture, in fact, he did not know whether it would be his province, to recommend any particular press. The press he used was a large one, with a bed about 3 feet by 2 feet. It struck him that Tangye's press was admirably adapted for the purpose.

OIL OF CAJUPUT.

By Wm. West, F.L.S., Lecturer in Botany and Materia Medica at the Bradford Technical College.

The author stated that he had used much of this oil in place of oil of cloves, for the purpose of transferring sections from alcohol to Canada turpentine, and had found that it penetrates more quickly than oil of cloves, and that it is more readily expelled from the Canada turpentine afterwards. As the oil was down in the *blue list* for investigation he procured fourteen samples, which he examined, and reported that their specific gravities, at 15.5° C., varied from 0.9226 to 0.9240, while the colour varied from pale bluish-green or yellowish-green to full bluish-green. One sample was distinctly fluorescent. The boiling-point of the samples was found to vary from 174° to 174.5° C. After boiling the colour changed to a light brownish-yellow, and, with continued boiling, to a deep brownish-yellow, a change evidently due to copper, the presence of which was proved by shaking with diluted sulphuric acid, separating the latter from the oil, and adding ammonia in excess; this gave a distinct blue colour. The specimens showed no difference in odour, not even on boiling. The palest samples acquired a darker blue colour after adding a few bright copper turnings and agitating at intervals.

Failing to obtain some Bornean camphor oil, which has been stated to be an adulterant of cajuput oil, the author examined ordinary camphor wood oil, which could be detected by its odour if mixed to any extent with oil of cajuput, and the specific gravity of the camphor wood oil varied 0.9443 and 0.9444. This oil also became blue on contact with copper. Oil of eucalyptus (of commerce) might be used as an adulterant if the price were much less, but its odour is perceptible when mixed with oil of cajuput to any extent. The specific gravity of the eucalyptus oil examined was 0.9003, and was coloured pale bluish-green after agitation with copper. The author further spoke of an old sample of oil of cajuput which was pale brown in colour, and showed no trace of the usual bluish-green tint. The odour was like that of the other samples, but the specific gravity was only 0.9194.

The PRESIDENT said the Conference would thank Mr. West for his paper. Mr. West was a new contributor to their meetings, and he hoped they would hear from him again.

Dr. THRESH said he felt rather sorry that Mr. West had not gone a little more deeply into the subject, and investigated the character of these oils a little more fully. As a matter of fact all the oils with which he was acquainted which were used as substitutes for oil of cajuput, or used to adulterate it, differed chiefly in the fact they were dextro-

rate, whereas the oil of cajuput was levogyrate. So that Mr. West had examined the specimens with the polarimeter, he would have known definitely whether any of those were genuine or not. There were two points in the paper that were worth note: one was the simple way which Mr. West had devised for proving the presence of copper. He had tried several experiments with the oil for section cutting, and could bear out what the writer of the paper said with regard to its usefulness. He had no doubt that in a short time they would find this oil would be largely used for that purpose.

Mr. NAYLOR was not aware that there was any novelty in the use of this oil for section cutting. Something like fifteen years ago he had distilled it, and he knew that it was pretty largely used amongst microscopists, and that there was a ready sale for the oil for that purpose.

Mr. BURFORD (Leicester) said that it struck him that the specific gravity of the specimens was lower than was given in the "Pharmacographia." He corroborated Dr. Thresh's remarks regarding the determination of the specific rotatory power in the examination of essential oils.

Mr. PETER MACEWAN thought the Conference was much indebted to Mr. West for bringing forward this paper, especially as this was his first contribution to the Conference. Three or four years ago, when he happened to be examining some Borneo products, Mr. Jamie, who was a long time at Singapore, gave him a good deal of information regarding them, and that Borneo camphor oil was used to adulterate cajuput oil. Borneo camphor oil was a totally different thing from the camphor wood oil which Mr. West referred to. The Borneo camphor oil came out of the tree as soon as it was tapped, and the Borneo camphor seemed to be a product—a sort of alteration product of this oil deposited upon the wood. The tree was full of fissures in which the oil was contained. Of course ordinary camphor wood oil was distilled from the wood, and he two differed very much from each other. But the difference between Borneo camphor oil and oil of cajuput was not very great. By putting some pieces of copper into this camphor oil it became in a few days like cajuput oil. It was quite possible to add a little Borneo camphor oil to cajuput oil so that the addition would not be observed. For that reason he had always thought it would be a good thing to determine whether the cajuput oil that came to this country varied at all; for if it varied in specific gravity and other points like that, there would be strong evidence that it was adulterated with Borneo camphor oil as Mr. Jamie suggested. He took it from the paper which had been read that there was not this difference. He thought .922 was the lowest, and .924 was the highest in the paper. The specific gravity of cajuput oil determined by a French chemist was about .930, and it was very slightly levogyrate. Dr. Thresh was not quite correct in saying that eucalyptus oil was dextrogyrate, for it was sometimes levogyrate also; but he thought it was highly improbable that the oil would be adulterated with eucalyptus oil, as the natives would have to import that from Australia. The oil was not liable to sophistication in this country. On the whole he thought Mr. West had pretty clearly proved that the oil was not adulterated, as Mr. Jamie had suggested, seeing that Borneo camphor wood oil was always under specific gravity .900, except when it had been kept for twenty-five to thirty years.

Mr. MARTIN emphasised what Dr. Thresh had said as to the use of the polarimeter, a very useful form of which could be obtained at a cost of from 50s. to 3l.

Mr. PLOWMAN asked what were the advantages of the presence of copper. He could not quite agree with Dr. Thresh that the colours were uniform. The oil was formerly brought over in copper vessels, and copper might be put in to keep the colour, but it was not desirable to put copper in.

Dr. THRESH said it was the very farthest thing from his mind to suggest that it was desirable to put copper in.

Mr. MACEWAN wished to remind Mr. Plowman that the oil was imported in baskets containing a dozen or two wine bottles, so that the copper did not come from these. (Laughter.)

Mr. HOLMES said it was quite possible the copper was derived from the vessels in which the oil was distilled.

Mr. F. PASSMORE said it was being assumed that the blue colour was due to copper, but he quoted a statement of a distiller to the effect that it was naturally of a blue colour.

The next paper read was on

LARD—ITS ADULTERATION WITH COTTON-SEED OIL AND DETECTION THEREOF.

By Michael Conroy.

The purity of lard for use as an ointment basis is a matter of some importance, and consequently the British Pharmacopœia directs it to be made from the perfectly fresh internal fat of the abdomen of the hog, and according to the same authority, it should respond to the following characters and tests:—"A soft white fatty substance, melting at 100° F. (37.8°C). Has no rancid odour; dissolves entirely in ether, distilled water in which it has been boiled when cooled and filtered gives no precipitate with nitrate of silver, and is not rendered blue by the addition of solution of iodine." These tests are very good so far as they go, but they are, unfortunately, not sufficient for the misapplied ingenuity of the present day.

It has recently been shown by the United States press that cotton-seed oil is used to an enormous extent for the adulteration of lard, which may be seen by the opposition given to a Bill introduced into Congress for the prevention of this adulteration. The Mississippi Legislature passed resolutions against the Bill; the Merchants' and Cotton Exchanges of New Orleans sent protests to Congress against it, while the *New Orleans Times* calls it a Bill to reduce the value of cotton-seed 50 per cent. The following tid-bit is from the *Nation*:—"We cannot see any difference between this Bill and one which should seek to put a clog on new inventions. The discovery that butter can be made from the fat of a slaughtered ox as easily as from the cream of a living cow was a great boon to mankind, and one which cannot be suppressed, although it may be temporarily crippled by legislation. The discovery that the sun's light and heat work the same result in the production of edible fats in the seed of the cotton-plant as in the fruit of the olive or in the bodies of swine is akin to it, and is likewise a benefit to the human race. Why should Congress undertake to prevent the diffusion of this blessing? If the proposed Bill does not prevent it, the measure will be useless to those who clamour for it."

The value of these quotations is apparent when we consider the vast quantity of American lard that is imported into this country. I have no statistics at hand, but I think it is under the limit to place it at one half the total consumption; and we are told by the *American Oil and Drug Reporter* of April 4 last that "the pure food laws of England have in no way interfered with the sale of American refined lard, and no complaints have come to the surface, which is good evidence that the article gives satisfaction under the rigid scrutiny of exacting foreign buyers." Since this date, however, a change has come over the spirit of the *Reporter's* dream, for the matter has been vigorously taken up and several prosecutions have been carried; but as the adulteration is a paying one, it is not likely to be easily crushed.

Fortunately, the presence of cotton-seed oil in lard is easily detected, and my object in bringing the matter under your notice is to lay before you some of the tests that I have myself tried. The first is the nitric acid test, which some years ago I had the honour of reading a paper on before the Liverpool Chemists' Association in connection with the adulteration of olive oil. It consists in heating and stirring well about $\frac{1}{4}$ oz. of lard with one-tenth its weight of strong nitric acid (sp. gr. 1.42) in a porcelain dish of about 8 oz. capacity until brisk action commences, when it should be removed from the source of heat. Pure lard sets in about an hour to a pale orange-coloured solid like citrine ointment; but if adulterated with cotton-seed oil it takes a more or less deep orange-brown tint according to the extent to which it is present. There are two drawbacks to this test, the first being that lard sometimes contains a small amount of water which reduces the strength of the acid, causing the action to be less energetic and thus leading to error. The second is that the difference in colour between pure and adulterated samples is not sufficiently definite when the adulterant is under 5 per cent.

I have also tried the test proposed by M. Labiche, who says that when cotton-seed oil is treated with subacetate of lead and caustic alkali, it gives almost immediately an orange-red reaction. The author mixes equal parts of the oil and a saturated solution of neutral acetate of lead and adds

ammonia, stirring briskly. The acetate of lead decomposes, and the nascent oxide reacts upon the oil, causing it to turn red. If 20 per cent. of cotton-seed oil be present the sample is said to turn red at once, lesser quantities show after some time. In my hands this test has proved an utter failure, but I think it may be due to the fact that the cotton-seed oil which I used in my experiments was highly refined; and it is quite possible that the crude oil would give this reaction.

The next test is by Ernest Milliare, and was proposed by him for the detection of cotton-seed oil in olive oil. It is an excellent test and quite applicable to lard. It is as follows:—In a porcelain capsule, holding about 1 litre, 15 c.c. of the sample in question are heated to 110°. Then, whilst still continuing the heat, we pour upon the oil a mixture of 15 c.c. of a solution of soda of 40° Baumé in distilled water, and of 15 c.c. of alcohol of 92 per cent. When the mass has become homogeneous we add, drop by drop, so as not to cool the paste and form clots, about $\frac{1}{2}$ litre of distilled water. After boiling for a few minutes the fatty acids are separated by means of pure sulphuric acid diluted to one-tenth. As soon as the separation is complete and the sulphuric acid is in slight excess 5 c.c. of the hydrated fatty acids are collected with a silver spoon and poured at once into a test-tube, about 3 c.m. in diameter and 12 in length. We add 20 c.c. of alcohol of 92 per cent., and heat slightly in the water-bath to dissolve the fatty acids. When the solution is effected 2 c.c. of a solution of silver nitrate (30 grms. in 100 c.c. of distilled water) are added, the tube is placed in a water-bath and heated until about one-third of the mass is evaporated. The tube is then removed from the water-bath. Whatever the origin of the sample, its fatty acids remain unaltered if the sample be pure. But if cotton oil is present the silver is reduced and blackens the fatty acids which rise to the surface. In this manner 1 per cent. of cotton-seed oil can be detected in olive oil.

In using this test for lard, instead of for olive oil, as intended by its author, a brown colouration, instead of a black one, is obtained in samples containing cotton-seed oil, while pure samples remain perfectly white, and I find it better, instead of adding the $\frac{1}{2}$ litre of cold water, "drop by drop," to use boiling water. For delicacy and reliability this test leaves nothing to be desired, and its only drawback is the time it takes to perform.

Another test for the detection of cotton-seed oil in olive oil, dependent upon the citrate of silver reaction, is given by Bechi as follows:—5 c.c. of the oil are mixed with 25 c.c. of 98 per cent. alcohol and 5 c.c. of silver nitrate solution (prepared by dissolving 1 grm. of the nitrate in 100 c.c. of 98 per cent. alcohol); the mixture is heated to 84° C. If cotton-seed oil be present, the mixture becomes coloured, but not so if the oil be genuine. It is necessary to avoid heating by the direct flame, as other oils which may be present, such as linseed, colza, &c., will give colorations.

This, unlike the previous test, is not quite suitable for the detection of cotton-seed oil in lard, because lard sometimes contains traces of sodium carbonate, due to the fact that this substance is commonly used in washing lard that has become rancid. Slight traces of sodium carbonate decompose the silver nitrate, and the subsequent heating reduces it, causing samples of genuine lard to become darkened in such a manner that they might possibly be condemned as impure.

For several weeks past I have tried these and other tests with the object of finding the most reliable and expeditious, and my experience is that those dependent upon the reduction of silver nitrate are the best, and the following *modus operandi* has given me results that are entirely satisfactory and reliable, and only requires a few minutes' time.

1. Make a test solution, containing 5 parts of silver nitrate and 1 part of nitric acid (sp. gr. 1.42) in 100 parts of rectified spirit (sp. gr. 838).

2. Melt a small quantity of the lard to be tested in a water-bath and pour about 100 grains of it into a dry test-tube, about half an inch in diameter. To this add 20 grain measures of the above-mentioned test solution and place the tube in *boiling* water for five minutes, taking care that no water enters it.

Pure lard remains perfectly white, but, if adulterated with cotton-seed oil, it assumes a more or less olive-brown colour, according to the amount present. The colour is best seen when the lard sets, and it saves time to put the test-tube direct from the boiling water into a vessel of cold water.

The presence of 5 per cent. of cotton-seed oil in lard gives a very decided olive-brown coloration with this test, and 1 per cent. gives a colour quite distinct from genuine lard. The addition of nitric acid to the test solution is intended to neutralise any traces of alkali or alkaline carbonate that may be present, and it also prevents a slight reduction of the silver nitrate which takes place in genuine lard. It must not be forgotten that some samples of lard might possibly contain sodium chloride, though I have never met with any, in which case the silver nitrate would be precipitated as chloride instead of reacting on the oil, but this would be at once seen by the white curdy precipitate that would be formed.

The PRESIDENT said he was sure they all felt very much obliged to Mr. Conroy for this paper. He was sorry the Mayor was not present—(laughter)—as the subject was one in which he was specially interested. But there were several other gentlemen present who were also interested in it, and who might have something to say in reference to it.

Mr. WM. THOMSON, F.R.S.E. (Manchester), said he had made a number of experiments to determine this matter which Mr. Conroy had put forward, and the feeling he had with regard to the nitrate of silver was this, that if they got no reaction at all they might be satisfied that the lard contained no cotton-seed oil, but if they got a reaction he did not know how they could be satisfied that it was due to cotton-seed oil, because there were many other substances that would give similar reactions. The most accurate test he could find, and it was not at all satisfactory, was to determine what amount of iodine was absorbed by the lard. If they got a large amount of absorption they might rest assured that the lard was not pure, but if they got the correct amount—that was, the amount that would be taken up by pure lard—they could not be certain that the lard was pure; because if they took lard and separated from it a certain amount of lard oil they found that the solid fatty acids had a less absorption for iodine than the lard oil had; consequently, if they put in a similar amount of cotton-seed oil in place of the lard oil extracted, it might appear on testing it to be pure lard. He was trying to get over that difficulty by freezing or cooling the oil and pressing it between blotting-papers, and then extracting the oily matters from the outside of the blotting-paper and testing with iodine. He had made a large number of experiments by the process described by Bruce Warren, viz., acting upon the lard by chloride of sulphur dissolved in bisulphide of carbon, but the results had been quite unsatisfactory, as the lard itself became vulcanised in course of time. Up to the present he felt that there was really no thoroughly satisfactory method of testing definitely whether lard is or is not adulterated. (Cheers.)

Mr. GROVES asked how the consistence of the lard was maintained if an addition of 50 per cent. of oil was made to the fat. He thought such an addition would modify the consistence of the fat. Did they first of all express the fluid part of the lard, and then add the cotton-seed oil?

Mr. CONROY: I believe that is how it is done.

Mr. MASON remarked that although the British Pharmacopœia said that oil of peppermint and other things must be distilled from certain plants grown in Britain, it did not follow that lard should be the product of the hog reared in Chicago. (Laughter.) The amusing paragraphs from the American journals which Mr. Conroy had called their attention to were more of a political nature than anything else. He wanted to know what was the matter with cotton-seed oil. Was there any reason for not preferring it? In the United States and Canada cotton-seed oil was superseding olive oil for many purposes, among others for cooking fish. He asked Mr. Conroy whether he had for his experiments taken lard supposed to be Armour's, or had mixed the lard with oil in his laboratory? The very best possible methods were employed to get the cotton-seed oil as pure as possible. It was sold largely in two forms—one in its ordinary condition and another as olive flavoured, in which it was intended as a substitute for olive oil. He should like to say that he read in one of the London papers last week a paragraph to the effect that olive oil was being manufactured from sunflower seeds. (Laughter.)

Mr. DOTT said that a manufacturer of cotton-seed oil con-

fided to him some time ago that the finer qualities were used for the manufacture of margarine.

Mr. CLAGUE said if they were to use cotton-seed oil for cooking purposes let it be called cotton-seed oil, but he objected to having it called lard oil. (Hear, hear.) He was speaking to a gentleman the other day who told him that three-fourths of the lard sold as such was adulterated with cotton-seed oil, but he said it was no use legislating. If they called it lardine or armourine they would sell just as much of it as they had done in the past, and the gentleman pointed out that the sale of margarine proved what he said. He asked if there was anything in the market now that could be guaranteed pure lard, and the gentleman replied, "Yes, but we want 8s. a cwt. more for it."

Dr. SYMES said Mr. Conroy had given them a very good test, and it was desirable to have a reliable test easily applied. There was a great deal of difference between lard or olive oil and cotton-seed oil. Cotton-seed oil was a drying oil, and their American friends were endeavouring to thrust cotton-seed oil upon us in many forms. For instance, Columbia salad oil, which was very fine looking, was nothing but cotton-seed oil. When it came as cotton-seed oil and was called by that name it might be of great value, but they had very little use for it as pharmacists.

Mr. WARD stated that some twenty years ago he had met lard containing 12 to 14 per cent. of water, and the lard was really improved in appearance by the addition. It was added as the lard was cooled, and by dexterous stirring the appearance of the lard was improved. It was one of the most difficult things to do to procure a sample of pure lard, and a simple and reliable test would be a great boon. He thought much of the lard met with contained cotton-seed oil. The lard oil was extracted and sold at a much higher price than the lard was worth, and the place of the oily portion of the lard was supplied by cotton-seed oil. It was possible to deprive cotton-seed oil almost entirely of its colour, and if that were done he did not see how the nitrate of silver test was going to detect its presence, the colouring matter being the cause of the reaction.

Dr. THRESH asked Mr. Conroy if he had examined Irish lard. A few weeks ago he was in Ireland, and when about to return he observed some casks being transferred to the vessel. One of them had got the end knocked out, and contained dirty-looking grease. He asked the man who was loading them what the grease was. The man said, "I don't know what it is, sir; but it is refined Irish lard when we bring it back." (Laughter.)

Mr. CONROY, in replying, said that in the manner in which his test was applied he did not think there was any substance—at least, none had come under his notice; and if any had come under Mr. Thomson's notice he should be glad to know of them—that would give a similar reaction to cotton-seed oil. In reference to Mr. Mason's question, why not use cotton-seed oil? what disadvantage was there in using it? he replied, there was none. Cotton-seed oil, when highly refined, was in his opinion as good as best olive oil, and many confectioners prefer the adulterated lard to the pure lard, because it made better pastry. But the point was—call it by its right name. He had examined many samples of lard obtained for pharmacists, and not one of them was adulterated. The samples of adulterated lard which he had tested were prepared by himself by adding 5 per cent. or more of cotton-seed oil. A sample of lard to which he added 20 per cent. of oil looked better than it did before it was adulterated. With regard to Dr. Thresh's question, he thought the Irishman had been imposed upon. He did not think they did such things in Ireland. ("Hear, hear," and cheers.)

The Conference then adjourned for the day.

WEDNESDAY, SEPTEMBER 5, 1888.

ON resuming on Wednesday morning at 10.15, the President announced the name of two other delegates, namely, Mr. Jefferson and Mr. Ward, representing the Leeds Chemists' Association. He then called upon Mr. Holmes to read a note.

NOTE ON INSECT POWDER.

By William Kirkby, F.R.M.S., Pharmaceutical Chemist.

The inquiries of the writer lead him to believe that insect powder is very largely adulterated. The Trieste merchants,

for example, adulterate it, and for that reason Mr. Consal St. John has recommended that the Dalmatian powder should be imported direct from Ragusa. As it seemed probable that a microscopic examination would lead to some interesting results, an attempt was made to get samples of the entire plants, *Chrysanthemum cinerariaefolium* and *C. roseum*; but the writer failed in this, and could obtain no information as to the cultivation of Dalmatian insect powder. It is the unopened flowers of the wild variety of the former species which are supposed to yield the most powerful insect powder. The plant is a composite one, and in the florets of the ray the limb consists of an upper and a lower epidermal layer; the former of these has the cells developed into papillæ, which in the dry state contract laterally and break away easily, being afterwards found in the powder. The opposite sides of these cells enclose an angle, and the walls are finely striated; the lower epidermal cells have sinuous walls, and are elongated. Other points of note in the histology of the flowers are the spiral tracheæ of the nerves; the parenchymous cells of the florets of the disk, each of which contains a solitary crystal or stellate tuft of crystals of calcium oxalate, and the papillæ of the stigma. Pollen grains are found in the powder in considerable quantity. Each is globular and furnished with spines; these and other characters which are afforded on examination render it possible to readily detect any admixture, such as mineral matters, starch, woody, scleroginous, or libriform tissues, epidermal tissues bearing hairs and the like. As regards the possible admixture of insect powder with the powdered flowers of *C. roseum*, the writer pointed out in the first place that, although the latter is cheaper, he had difficulty in obtaining a specimen, and when he had obtained it, he found, on examination, that the papillæ of the ray-florets are larger and much thicker at the apex than those of the true flower, and, after a little experience, this characteristic can be easily recognised. It is advisable to steep the powder in a mixture of solution of potash (20 per cent.) and glycerine in equal parts before submitting it to examination under the microscope.

[This paper was accompanied by drawings of the distinctive cells referred to in it, also drawings of the pollen grains, and these were produced on large but rough diagrams, which were exhibited to the meeting. It would appear from these drawings that there is no difficulty in detecting the presence of the cells in any powder. It will be observed that the name of the germs is given above as *Chrysanthemum*. While reading the paper Mr. E. M. Holmes stated that this genus has now been incorporated in that of *Pyrethrum*.]

The PRESIDENT said he was sure they would accord their thanks to Mr. Kirkby for his very interesting paper.

Mr. GREENISH congratulated Mr. Kirkby on the paper, which showed the use of the microscope not only in pharmacy, but in commerce. Mr. Kirkby had used it to determine the mixture—perhaps it might be an admixture or an adulteration—but it showed the great value of the microscope in researches of this description. The drawings before them would enable anyone conversant with the microscope to determine whether there was an admixture or not. He hoped Mr. Kirkby would continue his researches in matters of this description, and bring the results before the Conference. (Hear, hear.)

Dr. SYMES asked whether the Dalmatian powder was as active as *Pyrethrum roseum*, because he understood the former was the only one that had been available to them for some years past.

Mr. CONROY said he noticed that Mr. Kirkby did not give any of the characters of the stem of the flowers. Of course most of the powders contained portions of the stem, and in appearance under the microscope these stems would look like adulterants. So far as his experience went, the insect powder was not adulterated in this country, but can over in an adulterated state. The powder could be purchased at 20, 30, 40, or 50 per cent. below the price paid for the flowers. He thought the most common adulterant was fustic.

Mr. GREENISH asked Mr. Conroy whether he considered the addition to the powder was adulteration or admixture, or carelessness in collection.

Mr. CONROY thought the proof of that was in the price.

If they could buy insect powder at 30 or 40 per cent. less than they could buy the flowers he thought the powder must be adulterated.

Mr. HOWIE said he had very little faith in microscopic examination in determining the value of insect powder. He had handed over three specimens to pharmacists who were specialists and skilled microscopists; two of the specimens were certainly adulterated, and they were certified to him as genuine. He thought they must go down to the black-beetle test. (Laughter.) He had lately been told of the adulteration of insect powder with starch.

Mr. R. A. ROBINSON wished to know whether the powders were poisonous. There had been a few paragraphs in one of the journals on the subject recently. Some said they were, some that they were not. As adulteration was so extensive it might be that the poisonous property was introduced with the adulterant. He thought that the effect was produced on the insects in a choking manner. It did not kill them, but made them turn over on their back choking.

The PRESIDENT said he had been using a tincture prepared from the powder for killing green fly on rose trees. He found it equally as effective as the powder. He mixed the tincture with water. He thought that proved that it contained a principle which was poisonous to insects, and that it did not act mechanically merely.

Mr. GREENISH said there was a great difference between an examination under a microscope and a histological examination. Mr. Kirkby had employed certain solutions and reagents, and he believed Mr. Kirkby's results were quite correct. There were some doubts as to whether the powder was an insecticide or not. He had heard it ably argued that it was not an insecticide, but stupefied the insects for a certain period.

Mr. MACEWAN said that when he was in Edinburgh Mr. Hodkinson, of Macclesfield, sent him a fine specimen of *Pyrethrum roseum*, which he said grew abundantly in the neighbourhood of Macclesfield, and if its value as an insecticide were determined at any time there would be no difficulty in cultivating it in this country. The flower was red, but similar in conformation to the specimen submitted.

Mr. CONROY thought it would be interesting to mention how he applied the "black-beetle test" which had been referred to, or, as he called it, the "fly test." (Laughter.) He got two or three beakers and put half-a-dozen flies into them, covered them over with a little muslin, and dusted the insect powder through the muslin. If he used several samples to test, he could tell in two or three minutes which was the best.

Mr. GERRARD mentioned that he had tested the action of Dalmatian insect powder on some beetles to ascertain whether it was merely a local irritant. He sprinkled some powder on the posterior extremity of the animal and it had the same effect there as when it was placed on the front. (Laughter.) He thought that showed that it was merely a local irritant. He felt sure if it were taken internally the action would be precisely the same, but he did not think it acted as a poison in the sense in which they looked upon the toxic alkaloids and glucosides as poison.

Mr. MASON remarked that he had always understood that the powder produced asphyxia. He had a sample on one occasion which contained 60 per cent. of sumach, besides other ingredients, and only a small quantity of insect powder. Powdered Barbados aloes was quite as effective an insecticide as the powder usually sold.

Mr. MARTINDALE considered there was some principle in the powder beyond that which induced the choking properties. There was a note in the Year-book of 1881 on the subject; and in the *Times* about twenty years ago an African traveller stated that he had used the tincture of African insect powder, which was nearly allied to Dalmatian powder, with the very best results in the attacks of the tsetse fly. A similar action was produced, he believed, by the common tansy flower, which was used in some places with very good results.

Mr. HOLMES remarked that the object of Mr. Kirkby's paper was to point out the distinctive characteristics of the insect powder apart from anything else. He had given the characteristics of only two plants which had been used as insect powder—*Chrysanthemum roseum* and *Cinerariaefolium*. In reply to Dr. Symes, Mr. Holmes said that the general belief was that the Dalmatian insect powder was more

powerful than Persian insect powder, and the latter had gone out of use to a considerable extent. Mr. Kirkby had referred to the stalk of the flower in the paper. He believed the powder was imported in an adulterated state; but he did not think it had been proved that fustic was used, although that had often been said. He asked where Mr. Conroy had got his information on that point.

Mr. CONROY said he had received the information from people who sold the fustic. (Laughter.)

Mr. HOLMES said a pharmaceutical paper had stated that a volatile acid had been obtained from the flowers, and that the acid had the power of causing dizziness in the human being. The subject was worth further investigation. A gentleman in Hull wrote to him a few days ago saying that someone had died in that district from the effects of insect powder. Whether that was due to adulteration or to the active principle of the powder he did not know. He had received a sample of the powder, which he proposed to send to Mr. Kirkby for examination. The insect powder was not merely a local irritant, because it first of all stupefied the insects, and ultimately killed them. He thought the tincture would be better than a simple powder. It might be interesting to those who joined in the excursion to know that other essential oils, such as oil of cedar, would keep off insects. When he was in Scotland a short time ago, he asked a chemist if he had any tincture of insect powder, and he recommended oil of cedar, which, rubbed on the skin, kept the flies at a respectful distance.

Mr. MASON considered that the cedar-wood oil would be worse than the flies. (Laughter.)

Dr. TIRESH read the next paper, which was

PROXIMATE ANALYSIS OF THE SEEDS OF CASSIA TORA.

By William Elborne, F.L.S.

In this paper the author quoted a leaderette which appeared in this journal (CHEMIST AND DRUGGIST, October 29, 1887) in regard to this seed. Therein it was stated that at recent drug sales "15 bags of pale coffee-coloured seeds, cylinder shaped, and about $\frac{1}{2}$ in. in length, the ends being somewhat oblique, were offered for sale. No one appeared to have the slightest idea of their use, and the lot, altogether about 22 cwt., was withdrawn. The parcel was imported here from Bombay, and we understand that the seeds have been identified by Mr. Holmes as the seeds of *Cassia tora*, Linn., or oval-leaved cassia, called *Kulkul* by the Arabs and *Peti tora* by the natives of Ceylon. The shrub, which attains a height of about 5 feet, grows in most parts of British India, and is extensively cultivated by the natives for the sake of its leaves, which play an important part in Hindoo pharmacy. It also grows in Japan, and has been found in Central America by Houstoun. In Cochin China, also, it is very common, but in the latter country it does not seem to rank among the medicinal plants. The *Cassia tora* seeds, ground with sour buttermilk, are occasionally used as a cure of itchy eruptions; but the leaves, which are strongly mucilaginous and of a highly disagreeable odour, are a household remedy among the Hindoos. In the form of a decoction they are given to children during teething, fried in castor oil they are used as a cure for foul ulcers, and finally, rubbed up with lime juice, they form a popular remedy for ringworm. For the latter purpose, and in a similar manner, the root is also used. In Western India a blue dye is also made from the seeds, in combination with *Nerium tinctorium*, Roxb. The seeds have been imported into this country before now, but it does not seem that there is any demand for them."

Owing to the reputation which the drug has in the East as a remedy for cutaneous diseases, it occurred to the author that a proximate analysis of it might lead to the discovery of the principle to which its therapeutic properties are due. He accordingly submitted it to examination, and found that the seeds contained 27.2 per cent. of moisture and 8 per cent. of ash. Percolation of the powdered drug with ether resulted in the obtaining of 9.5 per cent. of residue, consisting chiefly of fat; but there was also present a body resembling chrysophanic acid, but which subsequent tests led the author to believe was emodin, and the examination of the alcoholic extract resulted in the isolation of a glucoside which he put down as "potential emodin," and to emodin he attributed the therapeutic pro-

erities of the seed. In concluding, he referred to several plants—such as the dock leaf—which are reputed to allay various forms of cutaneous irritation, this property being due to the presence of bodies allied to chrysophan.

The PRESIDENT said their thanks were due to Mr. Elborne or the paper. (Hear, hear.)

Mr. NAYLOR observed that the investigation was one which required a good deal of chemical knowledge and skill. He was a trifle surprised at the conclusion at which Mr. Elborne had arrived on apparently few experiments. He made this observation not to disparage what Mr. Elborne had done, but rather in the hope that his attention might be further directed to the subject, and that he might favour them with another communication at a future Conference, and better substantiate the conclusion at which he had arrived.

Mr. HOLMES said the seeds appeared to be largely used in the East, but he doubted whether they were likely to contain a principle of much value in comparison with chrysophanic acid, because they were generally used in India mixed with other seeds useful in skin diseases. The fact that they were not used alone, but mixed with other seeds, seemed to indicate that they were not so powerful as to merit examination from a physiological point of view. Whether the active principle of the seeds was chrysophanic acid or emodin must be determined by the chemists.

The next paper read was on

THE SOLUBILITY OF CAFFEINE CITRATE.

By A. W. Gerrard, F.C.S.

A frequent demand for citrate of caffeine having arisen in my dispensing practice, it was deemed advisable to keep a solution of the same ready made. Most dispensers are aware of the advantages of time saving and cleanliness such solutions afford, and provided they keep well, there is no reasonable objection to using them.

Citrate of caffeine being official, information about it was first sought in the B.P., where the following remarks on its solubility are found:—"With a little water it forms a syrupy solution, which on dilution yields a white precipitate of caffeine, that re-dissolves when 10 parts of water have been added." As this is a very plain statement given on high authority, no difficulty was expected in satisfying my want. My first attempt, however, to obtain a 10 per cent. solution was a failure, and as the citrate of caffeine might have been at fault five other samples were obtained, and one made; none of these on testing responded to the official-quoted solubility.

Experiments made to test the true solubility of the drug showed it would be useless to follow the ordinary method for finding solubility. The reason of this is that citrate of caffeine when added to water in excess of its solubility is decomposed into caffeine and citric acid, the latter dissolves whilst the former separates, therefore the solution would contain a relatively larger quantity of citric acid than caffeine. Such being the case, the method was adopted of weighing 1 part of the citrate in a weighed flask, adding distilled water at 15° C., with frequent agitation until solution was complete. Working in this way it was found as the result of eighteen experiments that the solubility was 1 in 29.8, or practically 1 in 30. In each experiment time of digestion was taken into account, and the temperature varied between 14° and 16° C.

Attempts to get the clear syrupy fluid of the Pharmacopœia were failures. What occurs on adding water to citrate of caffeine is nevertheless interesting. When 3 or 4 parts of water are added it retains a fluid form for a moment only, never dissolving; it then sets to a pasty mass of crystals thick enough to adhere to the containing vessel on inversion.

How the error found its way into the Pharmacopœia it is difficult to understand, as the difference between a solubility of 1 in 10 and 1 in 30 is a wide one. It is to be hoped that in future editions of the B.P. such errors will be avoided: they are no credit either to medicine or pharmacy. That the book which beyond all others the pharmacist is expected to use as his guide should mislead him is superlatively bad. The remedy is easy; let those with whom the power rests give us our legitimate share in the compilation of the Pharmacopœia, and such mistakes as those on record will be few indeed.

Mr. NAYLOR followed with the following communication:—

CITRATE OF CAFFEINE.

By John Moss, F.I.C., F.C.S.

During August I received, for the examination of its contents, a small box labelled "Citrate of Caffeine, old P.B." It contained a mass of "colourless, silky, inodorous, acicular crystals," very unlike the white inodorous powder we know as citrate of caffeine. It was only slowly dissolved by many times its bulk of water, and was quite neutral to litmus. In appearance it corresponded to caffeine, and on further examination not a trace of citric acid was discoverable. It was, in fact, pure caffeine.

I was informed that many sales of it had been made as "citrate of caffeine, old P.B." and have no doubt this was done in perfect good faith, but could obtain no explanation of the reference "old P.B."

The important point to be emphasised is, that if the above article is dispensed as citrate of caffeine, a dose of caffeine will be exhibited as nearly as possible double that contained in an equal weight of caffeine citras B.P.

The PRESIDENT said the Conference would thank the authors of those papers for their contributions.

Dr. THRESH remarked that Mr. Gerrard had used the experiments he had made as a peg to attack the editors of the Pharmacopœia, but he did not say whether he had found specimens prepared according to the Pharmacopœia to yield the same results as those obtained with commercial specimens. He knew that commercial specimens did not correspond with the Pharmacopœia, and some would not dissolve even in 30 parts of water, but it was not generally known that pure caffeine was frequently sold as citrate of caffeine. Some years ago, when he had occasion to examine specimens of that kind, it was not uncommon for him to get citrate of caffeine from a wholesale house, and when examined to find it to be simply caffeine. He had just purchased three specimens in Bath, one of which was pure caffeine.

Mr. CRIPPS (Birmingham) said that he had some years ago examined citrate of caffeine for solubility, and he found that it did not agree with the Pharmacopœia, but it did not vary to the extent Mr. Gerrard had stated. The sample which he examined gave a solubility of 1 in 12. He adopted the plan Mr. Gerrard had followed, but instead of giving it three hours for digestion he gave it three or four days.

Dr. PAUL stated that caffeine was one of those subjects regarding which it was very difficult to determine the solubility. Neither the method of evaporating the solution or using a definite quantity of water with a definite quantity of the salt would answer the purpose. Having got it dissolved, it was almost as difficult to get it to crystallise out. Lastly, the product was very uncertain. All the salts of caffeine were easily made, and in a concentrated form might be kept crystallised.

Mr. DOTT said that one of the Edinburgh surgeons desired a strong solution of the citrate of caffeine for hypodermic injection, and he tried a number of methods of preparing it, such as adding more acid, but none of them were successful.

Mr. MACEWAN said that the double salts were very soluble.

Mr. A. CLAY ABRAHAM remarked that citrate of caffeine, under certain circumstances, might be made in the proportions named in the Pharmacopœia. Some years ago he was rather interested in this subject and made a number of experiments. He made citrate of caffeine both in small and in large quantities. In making it in small quantities and evaporating it with great care at a low heat, a citrate might be produced which would dissolve perfectly, but in five minutes it entirely decomposed. He thought this point of the decomposition would be found to be the key to the difference between the statements in the Pharmacopœia and those of Mr. Gerrard.

Mr. GROVES said with regard to the preparation of citrate of caffeine for hypodermic purposes, it had been shown some time ago that benzoate of soda would dissolve caffeine to a large extent.

[The sample of citrate of caffeine which had been made into a strong solution by Mr. Gerrard was tasted by one or two members and pronounced to be acid.]

Mr. GERRARD said caffeine itself had no alkaline reaction; therefore, if they added one grain of acid to a considerable quantity of caffeine, there was no neutralisation of the acid.

Mr. HODGKIN (Howards & Sons) said he had brought to the meeting a sample of caffeine made from denatured tea, recently presented to his firm by the Government, in order to show what could be done by English firms now that they were in a position to compete with the Germans.

Dr. SYMES said that the citrate of caffeine was always acid, and the fact that the sample was acid now would not prove dissociation. For hypodermic purposes benzoate of soda or salicylate of soda would enable a concentrated solution to be obtained.

Mr. MARTINDALE thought it a great pity they had had citrate of caffeine introduced into the Pharmacopœia, for caffeine nitrate was a perfectly stable salt.

Mr. SCHACHT asked Mr. Gerrard whether he had investigated the nature of the deposit which was formed on the addition of water to the caffeine.

Mr. GERRARD, in reply, said he had never met with such a sample of citrate of caffeine as Mr. Moss spoke of in his note. He examined carefully all the purchased samples of citrate of caffeine he used, and found they did contain practically the proper percentage of caffeine and citric acid. It was a pleasant surprise to him to find such was the case. In answer to Dr. Thresh, he pointed out that he had mentioned in the paper that he had prepared some according to the Pharmacopœia which gave the same results as the purchased specimens, and he had a right to come to the conclusion from that experiment that it possessed the solubility he had mentioned. It was possible they might find in the market citrate of caffeine having a different solubility to that of the samples he had examined. With regard to what had been said by Mr. Cripps, he should like to know whether that gentleman had examined his specimens to see whether they contained the proper percentages. Mr. Cripps might have used his water at a different temperature from that which he used, and that had an important bearing. If water of 80° or 90° were used, they would get a large quantity of citrate of caffeine to dissolve, and he had managed by using warm water to get a strong solution. The strongest solution he could get was 1 in 24. It underwent slight crystallisation after standing for fourteen days. In addition to the solvents for caffeine that had been named, he mentioned that citrate of potassium was also a powerful solvent. Mr. Abraham considered that caffeine could be made to dissolve in the proportions of the Pharmacopœia by very careful working. He believed he carried out his experiments with proper regard to care; nevertheless the result was what he had laid before them. The reaction of citrate of caffeine was always acid, because caffeine did not possess any alkaline property. It was possible to get caffeine citrate in definite crystals, but the moment it was touched with water it underwent decomposition, and was split into free acid and caffeine. He could not give Mr. Schaeht any information on the subject of his question.

Dr. THRESH read a paper entitled

A FEW LABORATORY NOTES.

By R. Wright, Pharmaceutical Chemist, Buxton.

Several months ago, acting upon the suggestion of Dr. Thresh, I undertook some experiments on the formulæ of several pharmaceutical preparations; and although possibly not of any great importance, it was thought that the publication of a few of them might prove of interest to pharmacists. The preparations to which attention will be drawn in these notes are:—Acetum ipecacuanhae, extractum cascara sagradae liquidum (tasteless), syrpus ferri phosphatis, and unguentum hydrargyri oxidi flavi, which will be taken in the above order:—

Acetum Ipecacuanhae.

For the production of this preparation two processes suggested themselves to my mind, viz., simple maceration of the drug in diluted acetic acid, and a combination of the processes of maceration and percolation. In order to decide between these alternative processes, the following experiments were tried:—

No. 1.—An ounce of coarsely-powdered ipecacuanha root was macerated for twenty-four hours with 2 fluid oz. of

acetic acid B.P.; the mixture packed in a percolator, and sufficient water added to percolate 1 pint of liquid.

No. 2.—An ounce of coarsely powdered ipecacuanha root was macerated for seven days in a mixture of 2 fluid oz. of acetic acid B.P. and 18 oz. of distilled water, with occasional agitation, the mixture strained, pressed, filtered, and made up to 1 pint with distilled water.

No. 3.—An ounce of coarsely powdered ipecacuanha root was macerated with 1 fluid oz. of acid acetic B.P. for twenty-four hours, the mixture packed in a percolator, and percolated first with 1 fluid oz. of acetic acid B.P., diluted with 9 oz. of distilled water, and afterwards with distilled water, until a pint had been collected.

Process No. 1 was found to be unworkable. Percolation proceeded very tediously for two or three days, and then stopped altogether.

No. 2 gave a straw-coloured preparation, of which 1 pint yielded on evaporation 78 grains of dry extract. Filtrated with $\frac{1}{2}$ -strength Mayer's solution, 2 fl. oz. required 76 cc. for complete precipitation of the alkaloid.

No. 3 gave a darker coloured preparation, 1 pint of which yielded 99 grs. dry extract on evaporation. Filtrated with Mayer's reagent, 2 fl. oz. required 8 cc. for complete precipitation of alkaloid.

The latter process would, therefore, seem to be the one best adapted for making acetum ipecacuanhae, and it gives a preparation which leaves nothing to be desired.

Extractum Cascarae Sagradae Liquidum (tasteless).

The present uncertain state of our knowledge of the chemistry of the bark of *Rhamnus Purshiana*, it is impossible to say whether or not the bitter principle possesses laxative properties. Considering, however, that there exists in the same genus another species yielding a non-bitter bark possessing properties very similar to those possessed by Cascara bark, it seems hardly likely, even if the bitter principle of the latter is found to contain laxative properties, that it will prove to be the only laxative principle existing in the bark. In THE CHEMIST AND DRUGGIST for January 21, 1888, an extract was given from an article by F. Grazer, published in an American journal of pharmacy, giving a formula for the production of a tasteless liquid extract of cascara. This consists in treating the coarsely powdered bark with magnesia, and afterwards extracting it with dilute alcohol. I have made some experiments in the same direction, using both lime and magnesia. By the former process a very pale coloured extract is obtained, which is apparently destitute of any laxative principle.

With magnesia, however, using a modification of Grazer's process, I have obtained a preparation quite free from bitterness, and which appears to act just as powerfully as the bitter extract.

The details of the process are as follows:—

Take of

Cascara bark, in No. 40 powder	..	..	1 lb.
Calcined magnesia	..	..	2 oz.
Distilled water	..	..	$\frac{1}{2}$ pint.
Proof spirit, a sufficient quantity.			

Mix the powders in a large mortar, and beat into a paste with the water. Allow to stand for twelve hours, and dry over a water-bath. Reduce the dry mass to powder, moisten with 18 fluid oz. of proof spirit, and pack tightly in a series of six percolating tubes. Percolation is then effected with proof spirit, the percolate from No. 1 tube being used as the menstruum for No. 2, and so on until the last of the series is reached. Proof spirit is added to No. 1 tube as required, and the first 14 oz. which passes through the last tube is retained. Percolation is continued until the bark is exhausted. From the remaining portion of the percolate the spirit is recovered by distillation, and the residue evaporated over a water-bath to the consistency of a syrup. This is added to the reserved portion, and the volume made up to 16 fluid oz. with proof spirit.

Syrpus Ferri Phosphatis.

In the *Pharmaceutical Journal*, series iii., vol. xviii., page 496, Mr. J. F. Brown, writing upon the above subject, called attention to the acidity of the B.P. syrup, and also pointed out that a syrup made in accordance with the instructions of the extra Pharmacopœia would not contain as much free acid as the B.P. syrup. The subject was discussed in the *Journal* the following week by Mr. Martindale and myself, and it was pointed out that a far better syrup could be prepared than was obtainable by the B.P. process. The

ssential features of that process are—(1) the preparation of ferrous phosphate by precipitation; (2) its solution in excess of phosphoric acid; (3) the addition of sugar and water so as to make the quantity up to a given volume. The resulting syrup contains 10 fl. oz. free phosphoric acid 63 per cent. strength in 96 fl. oz. of syrup. Since the subject attracted attention, I have made several experiments bearing principally upon two points—(1) the quantity of free phosphoric acid necessary in order to form a stable and alatable syrup; (2) the influence of excess of acid upon the keeping properties of the syrup.

On December 12, 1887, I made four samples of syrup containing the following proportions of free phosphoric acid (63 per cent. strength):—

1. 10 drachms in 12 oz. syrup (B.P. strength).

2. $8\frac{1}{2}$	"	"	"
3. 5	"	"	"
4. $3\frac{1}{2}$	"	"	"

Nos. 1 and 2 commenced to darken in colour a few days after being made, and ultimately every sample became slightly coloured, although the colouration in No. 4 is even now, after lapse of nine months, barely perceptible. In this sample, however, a slight deposit of phosphate has taken place, the supernatant syrup remaining clear.

It has been previously pointed out that the colouration which takes place is due to the action of the phosphoric acid upon the sugar, and the samples exhibited herewith certainly seem to bear out this statement.

That it is corrected with the peroxidation of the ferrous salt is equally clear; for the depth of tint observable in the different samples was found by experiment to be in exact proportion to the amount of ferric salt present. The quantity present in No. 1 was found to be six times as great as that present in No. 4.

In drawing up a formula for this syrup, another consideration must be borne in mind, viz., the syrup must bear dilution with water without the production of opacity or precipitation of phosphate.

Experiments were made with a view of ascertaining the amount of free acid necessary to prevent this.

The following syrups were prepared:—

Contained 5 drachms free acid (63 per cent.) in 12 fl. oz.

4	"	"	"	"
3 $\frac{1}{2}$	"	"	"	"

Nos. 2 and 3 both threw down ferrous phosphate on dilution; whilst No. 1 remained clear.

Mr. Martindale has already pointed out, *Pharm. Journ. II.* vol. xviii. p. 515, that a fluid drachm of the B.P. syrup contains the equivalent of 41.7 minimis dilute phosphoric acid, and hence that it is unsuitable for administration to children. A syrup made from the following formula contains about 20 minimis in each fl. dr.

Take of

Iron wire No. 35 (polished)	330 grains
Syrupy phosphoric acid, s.g. 1.50	6 fluid oz.
Distilled water	9 "

Place in a glass flask, plug the neck with cotton wool, and heat till dissolved. Filter the solution into 72 fluid oz. of simple syrup, and pour sufficient water over the filter to make the product measure 96 fluid oz.

Unguentum Hydargyri Oxidi Flavi.

This ointment is in frequent demand, and as there is no authoritative formula for it, the following formulæ were drawn out with a view to ascertaining the most suitable basis for such an ointment.

The B.P. basis for *Unguentum hydargyri oxidi rubri*, among others, was tried, but the result was so unsatisfactory that it must be pronounced a complete failure.

No. 1. Take of

Yellow oxide of mercury	60 grains
Hard paraffin	2 drachms
Soft "	6 "

The hard and soft paraffins were melted together, the mixture poured into a warm mortar, the oxide added, and the whole constantly stirred till cold.

No. 2. Take of

Yellow oxide of mercury	60 grains
Hard paraffin	60 "
Soft "	7 drachms

Mix as No. 1.

No. 3. Take of

Yellow oxide of mercury	60 grains
" wax	30 "
Soft paraffin	7 drachms

Mix as No. 1.

No. 4. Take of

Yellow oxide of mercury	60 grains
" wax	60 "
Soft paraffin	7 drachms

Mix as No. 1.

As will be seen from the samples exhibited, No. 1 gives a dull and unattractive looking ointment, from which the hard paraffin has separated in lumps. No. 2 is better, although the separation is still evident. On the contrary, a basis composed of yellow wax and soft paraffin gives an ointment of attractive appearance, perfectly smooth, and homogeneous. No. 3 is too soft for use in hot weather, and No. 4 is a preferable formula.

The PRESIDENT was sure they would thank Mr. Wright for this extremely valuable contribution to practical pharmacy. (Cheers.)

Mr. MARTINDALE said that with regard to syrup of phosphate of iron it was pointed out that he had made an error in transferring the formula from the British Pharmacopœia into the process by making a solution of the iron wire in phosphoric acid, all the equivalents in that not yielding a sufficient supply of phosphoric acid to make an equivalent of the 1885 Pharmacopœia strength. By an alteration of the process in the British Pharmacopœia from 1887 to 1885 phosphoric acid was changed to the syrupy acid. He had overlooked that fact. With regard to the result, the preparation of the Pharmacopœia was exceedingly acid. The British Pharmacopœia of 1887 yielded a preparation which he thought was fairly successful, kept fairly well, had about one-fifth less acid than the present one, but whether he would recommend so weak a strength as Mr. Wright had adopted—that was 5 oz. instead of $8\frac{1}{2}$ to produce the quantity referred to—was doubtful. If the acidity were reduced so much there was a likelihood of there being more of the ferric salt.

Dr. THRESH said it was an error to say that Mr. Wright gave 5 fluid oz. The number he gave was 6.

Mr. GROVES said that some years ago he made some experiments on the coloration of syrup of phosphate of iron, and the result he arrived at was that a kind of caramel was formed. The experiments of Mr. Wright seemed to bear out that view. The stronger the acid the greater the coloration. He thought the acidity of the B.P. syrup was far too great; 20 to 30 grains to the drachm would be ample, he should think. The deposit formed was not ferrous phosphate but ferric. If the solution of phosphate of iron were carefully closed from access of air—that is, kept in small and full bottles—it would keep any length of time.

Mr. PLOWMAN asked whether Dr. Thresh could give them any information as to the cascara. Mr. Wright in his paper used the expression "no doubt." In all probability he was right, but he should like to know on what ground he said "no doubt." If Mr. Wright had tried this property upon himself he might be peculiarly susceptible to cascara. Did he supply the preparation to his friends and ask them to give him their notes as to the effect? (Laughter.) He asked that quite seriously because nothing short of that would properly test it. A large amount of the bitterness was got rid of in the preparation, but he could not say that it was entirely free from bitterness.

Dr. SYMES remarked that in the formula used by Mr. Wright he had doubled the quantity of magnesia recommended in the journal from which he quoted. That might be effectual in removing the bitterness, but he had made some experiments in this direction, and he was rather inclined to think that, although the flavour was improved, some of the aperient effects were also taken away. He had some experience of its effects on several persons, not all his friends, as Mr. Plowman had suggested, or he should have sent Mr. Plowman some—(laughter)—and the general opinion was that the extract prepared in this manner was not so efficient as the ordinary kind. He had also used lime, and was rather surprised at Mr. Wright's statement that lime destroyed the efficiency while magnesia did not. By using lime they took

away as much of the property of the article as by using magnesia, but not more. Taken as a whole, he thought the evidence he had gathered was that the use of magnesia rendered the extract less efficient than that prepared in the ordinary way.

MR. GERRARD said it would be interesting to ascertain whether Mr. Wright had examined the final fluid extract for the presence of magnesia salts.

MR. A. C. ABRAHAM said he had tried the extract, and had evidence of its effectiveness. It was a mistake to suppose that magnesia took away something from the bark. It rather appeared to render that something more soluble and less nauseous.

DR. SYMES said that his impression was that instead of forming something soluble with acid the magnesia formed an insoluble substance which was not dissolved out.

MR. ABRAHAM said they could take the fluid extract prepared according to the Pharmacopæcia, and treat it with magnesia, and render it perfectly tasteless.

MR. CONROY said he had given samples of "sweet" cascara to doctors, and had tried it on his own family; and in his opinion it was quite as efficient as the ordinary preparation. He thought the magnesia simply neutralised the acid principle.

MR. GREENISH said he had instituted a series of experiments, and had made the preparation according to the method given in the "American Journal of Pharmacy," and adopted the following method of testing its efficacy. He gave to a person on whom the normal dose of cascara always acted half-an ounce of the extract deprived of its bitter principles, and it did not act at all. This dose was repeated two or three times. The liquid extract of cascara was made from the same sample, and the dose of the extract always produced purgative action; but the dose of the one deprived of its bitter principle in four times the quantity produced no action at all. He believed if he had administered an ounce at a time it would have produced no action. (Laughter.)

MR. RANSOM confirmed to some extent the statements of the author of the paper and those of Mr. Conroy. He had prepared some extract with magnesia, and the medical man who tested it pronounced it of equal efficacy with the other.

MR. SCHACHT said he could positively assert from his own experience that he could detect very little difference between the two preparations. The process of depriving it of its nauseous taste did not deprive it of its power. He did not think it was a purge, but a genuine aperient. He was convinced it was a useful tonic aperient, and a tasteless preparation.

MR. MACEWAN said that shortly after this paper was originally published by the American writer he got two friends to try the process, and both of them reported to him that the magnesia process thoroughly removed the taste of the bark, and also the aperient and purgative principles. In fact, they could drink 6 drachms, and one of them offered him a 16-oz. bottle, saying that he could take the whole of it at once. (Laughter.) But his friends were of opinion that the American author had simply given the germ of the truth in his paper, and they proceeded with their experiments. As soon as they got on the lines indicated in Mr. Wright's paper, they were absolutely successful in producing a preparation which did possess aperient properties; but there was this difference between the tasteless extract and the bitter extract, which he had experienced himself, that the former did not give the initial purge which the latter did, but in twenty-four hours the tasteless preparation began to exert an aperient tonic effect, and that was being regarded by many physicians as a most important character of cascara. If a physician wished to prescribe this tasteless cascara for a purgative effect he would be disappointed, for, as Mr. Schacht had said, he would find it was simply a tonic aperient, and for that reason he thought Mr. Wright had done great service to pharmacists by publishing a process that would show the exact method of preparation.

MR. MARTINDALE thought ordinary cascara might be taken as an aperient, a laxative, and a purgative.

MR. MARTIN said his firm had had considerable experience in preparing this extract. He confirmed the statements which had been made that the removal of the objectionable bitterness of the cascara did not deprive it of aperient action.

MR. RICHARDS said he had on many occasions taken the extract, but had to give it up on account of the effect upon the head.

MR. DOTT thought that in all probability the magnesia removed a portion of the laxative principle, and that when this process was carried far enough to render the cascara completely tasteless there was no laxative effect at all.

DR. THRESELL said he had explained to Mr. Martindale, who considered 5 oz. of acid rather too small a quantity in the syrupy phosphate of iron, that Mr. Wright recommended 6 oz. His impression was that that was quite sufficient for keeping purposes and for medicinal purposes. With regard to cascara, the discrepancies as to the therapeutic properties of the product were marvellous. It was very probable that this tasteless extract might prove a better laxative than the fluid extract which was at present officinal. He had no doubt that the nauseous principle was there, and in treating it with magnesia it formed an insoluble compound. To Mr. Plowman he could only say that he did not know what experiments Mr. Wright might have performed, but he could vouch for this, that Mr. Wright would scarcely make a statement unless he had sufficient ground for it, and the fact that Mr. Schacht and others corroborated his results rendered it tolerably certain that the preparation which Mr. Wright recommended was efficacious, and one well worthy of being further investigated. Mr. MacEwan had also made a valuable contribution to this discussion, showing as he did that a slight modification of the process yielded everything that was desired. Papers such as this of Mr. Wright's were really contributions to practical pharmacy, and similar ones might be contributed by many rising pharmacists if they would give time and attention to the matter. It did not want much knowledge of chemistry or any other science, and the experiments might be conducted in almost any pharmacy. He should like the Conference in coming years to have a larger number of papers of this character. (Hear, hear.)

MR. BALKWILL said that a little while ago, in dispensing an eye ointment with the yellow oxide of mercury, the doctor had ordered spermaceti ointment, and was much disturbed to find the irritation produced by it. The benzoic acid in the preparation made it very unsuitable as an eye ointment.

NOTE ON COMPOUND SYRUP OF HYPOPHOSPHITES.

By W. Inglis Clark, D.Sc., and D. B. Dott, F.R.S.E.

From their appearance, taste, and behaviour in general, we suspected that certain brands of the above preparation did not contain all that their labels represent, and we therefore submitted some of them to analysis. In the first place, the quinine was estimated by rendering a weighed portion of the syrup alkaline, diluting and agitating with three successive quantities of ether which was evaporated, and the residue dried at 110° C. It was wholly organic, gave the colour reactions of quinine, and was held to be that alkaloid. The method followed for the determination of the metals did not materially differ from that usually adopted. Ammonia in excess, ammonium chloride, and ammonium sulphide were added to a weighed quantity of the syrup which had been previously largely diluted. If not well diluted the precipitate does not settle, and persistently passes through the filter. After addition of the sulphide the solution should be heated in order to make sure that all the manganese is thrown down. This precipitate is dissolved in dilute hydrochloric acid, and the iron peroxidised with chlorate of potassium. On cooling the solution is neutralised with sodium carbonate, rendered faintly acid with acetic acid, acetate of soda added, and the solution heated to boiling. The precipitated ferric hydrate is collected on a filter, dried, and ignited. It is well to test the ferric oxide for phosphate by fusing with alkaline carbonate; and for calcium by treatment with the least quantity of hydrochloric acid, evaporating nearly to dryness, and then adding dilute sulphuric acid and alcohol, whereby the calcium, if any be present, is precipitated as sulphate. The manganese was determined in the filtrate from the iron precipitate by addition of bromine and digestion at 60°. The precipitate was simply dried and weighed in clasped watch-glasses as MnO_2 . To the filtrate from the manganese precipitate ammonia and oxalate of ammonia were added, to precipitate any calcium that might be present. The filtrate from the ammonium sulphide precipitate was then mixed

with oxalate of ammonium and allowed to stand twelve hours before collecting the precipitate. This is necessary, as the sugar in solution retards the precipitation. The oxalate of lime was strongly ignited and weighed as oxide. The filtrate from the last mentioned precipitate was evaporated, and the residue incinerated. It is hardly practicable to burn away the last portions of carbon, as they become imbedded in the used mass of salts. This difficulty is easily overcome by heating the mass with water, and then igniting the washed and dried charcoal by itself. It is advisable to do this, as it is difficult to wash everything out of the charcoal. The watery solutions were evaporated, nitric acid added, the residue strongly ignited and weighed as pyrophosphate. The potassium was determined in the usual way by platinic chloride, and the remainder of the residue considered as sodium salt. In order to make sure that the method followed was quite trustworthy, we also analysed a sample from our own laboratory, the composition of which sample was, of course, known to us. It is the sample marked A in the table below. As the amounts found correspond almost exactly with the amounts added, the results stated in the table must be substantially correct. No foreign acid was detected in appreciable quantity, except sulphuric, the presence of which is easily accounted for from the method of double decomposition being used in preparing one or other of the hypophosphites, and also from the practice of adding sulphate of quinine instead of hypophosphate. In the case of the sample D, for instance, this had evidently been done; as the percentage of hypophosphorous acid determined with mercuric chloride was deficient just by the proportion required for the quinine.

Grains of Hypophosphites in 1 fl.-drachm of Syrup.

—	A	B	C	D
Quinine	0.25	0.14	0.11	0.12
Iron	0.77	0.72	0.10	0.15
Manganese	0.27	0.22	0.00	0.08
Calcium	1.01	0.00	0.83	0.15
Potassium	1.00	0.68	1.48	0.29
Sodium	1.53	1.45	1.54	0.29
Total salts	4.86	3.21	4.06	1.08

It will be observed that B is deficient in quinine and calcium; C in quinine, iron, and manganese; and D in everything, whence it is evident that our suspicions referred to before were well founded.

The PRESIDENT, in thanking Mr. Dott for the paper, said it was of striking interest to pharmacists who did not make their own preparations, and did not examine those they sold.

Mr. ABRAHAM asked what the preparations reported on professed to be. Were they labelled?

Mr. DOTT said the hypophosphites supposed to be present were given on the labels, and in all except one case the amounts were stated, but the statements did not correspond with those found, neither in quantities nor substance.

Dr. THRESH: Were they of English or foreign manufacture?

Mr. DOTT: They were all English except one, which was Scotch.

ENGLISH-DISTILLED OIL OF *Mentha arvensis* (Japanese Peppermint.)

By John Moss, F.I.C., F.C.S.

I have recently distilled 205 lbs. of green herb of *Mentha arvensis*, grown partly in my garden, close to the Mitcham peppermint fields, and partly in a garden four miles farther away. This is the plant which yields Japanese oil of peppermint. The original slips were kindly furnished by Mr. Thomas Christy about two years ago.

The yield was 4 oz., being about one-eighth of 1 per cent., somewhat less than half the yield obtained at Mitcham. Had the plants been allowed to remain till in full bloom in September the yield would no doubt have been much greater, but having grown so luxuriantly as to be somewhat of a

nuisance, they were collected August 14, when they had attained a height of 3 feet, and distilled on the 16th.

The oil, after standing for a week, was brilliant, and had a decided yellow colour. The specific gravity at 62° F. was .9107.

When determining the boiling-point a light shower of very minute bubbles began to ascend at 339° F.; at 342° F. the shower was closer, and remained steady for a quarter of a minute; at 369° F. it was still denser, and composed of larger bubbles, and stayed quite half a minute; at 402° F., with the barometer at 30 in., there was a steady tropical rain of large bubbles, which continued for ten minutes, and the boiling-point was deemed to be determined.

The specific gravity of the oil after determining the boiling-point was found to be .9117 at 62° F.

Other specimens of oil distilled in England from imported herb, which was of course dry, were different in appearance and physical properties from that distilled by myself. They were some months at least older. One labelled "Non-rect." was distinctly green, and had a specific gravity of .9167 at 62° F.; a second, labelled "Rect.", was pale in colour, with a faint green tinge, and had a specific gravity of .9098. They were fatter-looking oils than mine, and no doubt owed their higher gravity and greater viscosity to resinification by age.

The specific gravity of these three oils confirms Todd's generalisation that the s.g. of pure oils falls between .908 and .917. Each of them is miscible with any proportion of rectified spirit. The odour of the oil from English-grown herb was much more powerful and penetrating, yet softer, than that distilled from imported herbs.

None of the three oils gives any colouration when subjected to the test given in Todd's paper above referred to. It consists in adding 1 drop of oil to a mixture of 25 drops of alcohol with 1 drop of nitric acid, 12. After a longer or shorter interval—sometimes a few hours—a permanent blue or bluish-green colour is developed if oil from *M. piperita* be used. The test is exceedingly delicate. It is unfortunate that we possess none for the cheap Japan oil, and can only after many experiments estimate the proportion of it in a mixture by the weakened response of the true oil present.

The object of this note is to place on record certain characters of Japan oil of peppermint of undoubted genuineness.

The PRESIDENT thanked Mr. Moss for the paper.

Dr. THRESH said Mr. Holmes, before leaving the meeting, desired him to mention in connection with this paper that he had two specimens of genuine *Mentha arvensis*. Some time ago this commonly occurred in England as a weed, but at the present time it was largely used for the purpose of obtaining the oil.

ABSTRACT OF NOTE ON *Cephaelis tomentosa*.

By F. Ransom.

A specimen of the root of *Cephaelis tomentosa* recently received from Trinidad has been subjected to chemical examination. It is stated to possess emetic properties, and to be used in the island as a substitute for ipecacuanha. In appearance it is entirely unlike the product of *C. Ipecacuanha*, the cortical portion being very thin, and having no annulations.

Sugar and starch were found to be present, and also traces of an alkaloid. The powdered root was exhausted with ammoniated chloroform, the percolate evaporated, and the residue treated with very dilute acid. This acid solution was rendered alkaline, and agitated with chloroform, which removed a very small amount of alkaloid in an impure condition. To a solution of this alkaloid in acidulated water the usual reagents for emetine were applied, and in each case positive results were obtained.

From this it is concluded that emetine is present in the root of *Cephaelis tomentosa*, but to an insufficient extent to render the drug of value as a substitute for ipecacuanha. The usual dose of the root in Trinidad has not been ascertained, but 60 grains in fine powder produced no effect when taken in England.

There was no discussion upon the paper, and the President thanked the author for presenting it.

NOTES ON CITRATE OF IRON AND QUININE.

By R. H. Davies, F.I.C., Chemist to the Apothecaries' Hall.

This paper dealt with the examination of nine English-made specimens of the citrate obtained from the manufacturers or wholesale houses, three of foreign make obtained from the London agents of the makers, and seven obtained from retail shops. One sample was made by the author as a standard, and, as the result of the experience obtained in manufacturing, Mr. Davies corroborated the statement made by Mr. F. W. Fletcher, that it is impossible to get 16 per cent. of crystallised quinine into the preparation. The main object of the investigation was to determine what proportion of amorphous alkaloid was in the samples, and with this object the isolation of the alkaloid or alkaloids (if other than quinine was present) was effected in the form of the crystalline tartrates. The results obtained are given in the table subjoined. In determining the amount of alkaloid by the official method, the author found that it was exceedingly difficult to dry the residue, and to be sure when it is dry. Thus the alkaloid extracted with ether from 1.3854 gramme of quinine sulphate lost in 65½ hours' drying no less than 15.8 milligrammes. The standard specimen of citrate yielded 15.75 per cent. of alkaloidal residue, the nine English specimens from 12.95 to 16.35 per cent., the retail specimens from 13.2 to 19 per cent., and the foreign specimens 11.4, 11.55, and 13.48 per cent., the residues being dried at 100° C.

The crystallised tartrates were prepared in the manner generally followed when quinine is to be examined with the polarimeter, and the results were considered by the author (although the work is incomplete) to be satisfactory in the case of the English citrates, which he believed to be an honest article; but, on the other hand, it was his opinion that foreign manufacturers have an imperfect idea of what is required by British pharmacists.

Table of Results obtained in Analysis of Samples of Citrate of Iron and Quinine.

No of Sample	Whence Obtained	Total Alkaloid Per Cent.	Tartrates Weighed Per Cent.	Tartrates Corrected Per Cent.
1	Home made	15.75	17.71	18.73
2	English maker	16.20	16.74	17.55
3	"	15.30	16.68	17.66
4	"	14.65	17.04	17.98
5	"	15.85	17.31	18.33
6	"	16.35	16.18	17.16
7	"	12.95	13.86	14.88
8	"	12.59	14.57	15.44
9	"	14.55	14.12	15.02
10	"	16.20	18.18	19.09
11	Foreign make	11.55	none	
12	"	11.42	9.09	10.11
13	"	13.48	5.40	6.51
14	Retail purchase	15.53	15.05	16.49
15	"	19.00	16.74	18.03
16	"	18.45	16.49	17.75
17	"	16.51	18.33	19.55
18	"	13.80	15.43	16.53
19	"	14.28	16.14	17.40
20	"	13.20	15.45	16.60
21	"	13.20	15.50	16.46

The PRESIDENT said the thanks of the Conference were due to Mr. Davies. He was sorry Mr. Davies was not present, but, nevertheless, there would probably be some discussion.

Mr. CONROY observed that there was not the same inducement to adulterate this article now, or to use less quinine, as there used to be, quinine being now so much cheaper. With regard to the statement that it was impossible to make it according to the Pharmacopœia to contain 16 per cent. alkaloid, he thought the 16 per cent. was an error which had been altered in the 1885 edition to 15 per cent. He had made citrate of iron and quinine, and knew it was impossible to get 16 per cent., but he had always been able to get 15 or 15½. The least he ever had was 15.3. He had tested samples of several makers, and had found them certainly up to the mark.

Mr. CRIPPS remarked that in drying the precipitate it was better to use a temperature of 105° to 110° C. than a lower temperature. It took a long time at 100° C. to become dry, but at 110° C. it was quickly dried.

Mr. DOTT said the author of the paper had not stated which alkali was used as a precipitant in separating the quinine from the sulphate. He asked for information on that point.

Dr. THRESH, in reply to Mr. Dott, said that Mr. Davies in one or two places stated that the quinine was precipitated with alkali, but did not say which alkali. He should infer that it was the alkali directed by the Pharmacopœia; otherwise Mr. Davies would have laid himself open to serious charges.

Mr. CONROY thought it was immaterial, seeing that the extract was washed out by chloroform.

Mr. GERRARD said there was no alkali equal to ammonia as a precipitant. Both potash and soda had powerful actions, but in the case of ammonia the change that took place was a minimum quantity. They could easily get rid of excess of ammonia by exposure to the air, but that could not apply in the case of potash and soda.

The Conference then adjourned for luncheon.

THE MINIMUM SIZE OF PILLS.

By N. Austen.

In consequence of a communication from Mr. Joseph Ince, the *Pharmaceutical Journal* some months ago endeavoured to initiate a correspondence on the minimum size of pills containing fractions of a grain of potent remedies, such as arsenic and atropine, the excipient and the quantity to be used of it, being left to the discretion of the dispenser. Few letters were, however, written about the matter, and as Mr. Austen considered the subject an important one, he submitted a short paper about it in order to initiate a discussion. In this he gave expression to his own opinions, cited the fact that Mr. Ince tells his pupils that 2 grains should be the minimum size, and the further fact that Mr. Martindale in the "Extra Pharmacopœia" gives 1 grain as the minimum. The author discussed the advantages and disadvantages of both, and put it to the meeting that Mr. Martindale's recommendation was, on the whole, the most practicable.

The PRESIDENT said he was sure they would thank this gentleman for his paper. He understood the author's primary object in bringing it forward was to obtain opinions from members of the Conference on the most desirable size of pills where no definite size was ordered. They would be glad to have the opinions of gentlemen who had experience in dispensing.

Mr. ROBINSON thought there were two or three safe rules to lay down. In the first place, if the ingredients ordered would make a pill of proper consistency, he took it it was their duty not to add anything to them. With regard to strong pills—arsenic and aconite—it was a doubtful question. Some medical men thought that a small pill was an advantage. He believed that a 1-grain pill was more difficult to swallow than a 2-grain pill, and it was certainly more difficult to make. He was quite aware that distinguished pharmacists present thought a 1-grain pill was a proper size for a minimum, but at present he did not say it was. The balance of opinion in his mind would be for a 2-grain pill. If the ingredients were $\frac{1}{8}$ of a grain, it would be difficult to make it up exactly to 1-grain pill, but if the ingredients were $\frac{1}{10}$ grain, it would be better to have a 1-grain pill. For ingredients of $\frac{7}{8}$ grain he would recommend a 2-grain pill.

Mr. GERRARD said there was one difficulty always in the way of the pill-maker. He had to deal with substances of different specific gravity, which occupied different volumes, and did not know without experiment how much inert matter he was to select to bring his material up to a particular volume. For each particular substance he needed a series of experiments, and the question was whether it was worth while to conduct them when he had to manipulate a few pills. He thought the matter must be left very much to the judgment of individual dispensers to add enough excipient or inert matter to make up the bulk to a certain volume. In the case of small quantities that volume should be about 1 grain. There could not be very much difference in the difficulty of swallowing a 1 or 2 grain pill. If the patient conducted the operation of swallowing carefully, it seemed to him he should get the 1-grain pill down as easily as the 2-grain one. (Laughter.) He was in favour of the 1-grain size for small quantities—quantities less than 1 grain.

here were plenty of substances that had to be made up into pills of smaller size than the quantity they represented—alkaline of quinine, for example—and in those cases they must use an excipient which would enable them to make the volume as small as possible.

Dr. SYMES thought an expression of opinion from that conference would be of value in regulating the size of pills. The difficulty pointed out in the paper was not an imaginary one, and it must have occurred to them frequently. He recommended that a small marginal mark should be made in prescriptions by the first dispenser, so as to guide future dispensers in following him. He was rather inclined to think that where dry ingredients were half a grain or under, a grain pill was very desirable, irrespective of the size. The difference in specific gravity would make no difficulty as long as they were agreed on the weight. If the dry ingredients came to about a grain, then it would be wise to decide on a grain pill. He believed the difference in swallowing between a 1 and 2 grain pill was very little. When he was beginning his career he was informed by a medical man that the proper way to swallow a pill was to place it, not on the tongue, but under the tongue. It could then be swallowed easily with a drink of water.

Mr. MARTINDALE stated that in a paper read before the British Pharmaceutical Conference at Liverpool he had suggested that the pill should be brought up to 1 grain, and subsequent discussions supported that idea. He was under the impression that the suggestion he then made had been accepted until he saw with surprise Mr. Ince's letter. His experience in London—not a small one—had been in favour of 1-grain pills where possible. When he was an examiner, taking the subject of dispensing, he gave on one occasion a grain of arsenic to make into a dozen pills; the variety of arsenes in which the different candidates produced these was perfectly astonishing, but one of the candidates' pills were made very nicely; they were as white as little pearls, and uncoloured. Such a pill, no doubt, was much more readily swallowed than a carelessly made pill. The opinions he had heard since Mr. Ince's letter appeared were in favour of 1-grain pill as a minimum.

Mr. ATKINS took it that the value of a paper was not only its own merits but the importance of the discussion which it might elicit. He thought so far as he gathered the object of the paper was rather to find out the opinion of the conference in regard to making pills in which a very minute quantity of active ingredient was employed, and not so much the question which Mr. Gerrard had dealt with as to the general excipients for larger pills. His own practice had been to follow the advice of Mr. Martindale and others, and to make the maximum result 1 grain. This was a question of importance not confined to themselves only, but a question very seriously affecting the judgment of the public on their work. People had come to him with the remark that the pills he had dispensed were different from those previously dispensed from the same prescription, and it was the penalty of provincial dispensers that they would be condemned if they differed from the London firm who had dispensed the prescription before them. His practice and intended practice when the ingredients were minute was to make up the pill to the maximum of 1 grain. He endorsed what Dr. Symes had said as to making a minute note as to the size of the pill on the prescription when first dispensed, and he also recommended the great advantage of having a column in their prescription books for marginal notes bearing upon the prescription opposite to them. He found that a great service when he had to prepare a prescription in the absence of the usual dispenser.

Mr. TOWERZY said he adopted very heartily the suggestion of Dr. Symes that pills of a less quantity than 1 grain should be made up to 1 grain, and those a little over 1 grain should be made up to 2. It had been for a great number of years his experience that the best way to swallow a pill was to put it under the tongue, but they could swallow a 6-grain pill in that way. Although doctors in his neighbourhood sometimes ordered very small pills, they occasionally required to have grains in a pill, and would be horrified if he suggested its division into six. They lived in an age when pills were very beautiful, but they were not always active. (Laughter.) He had had a recent experience of pills being made so beautifully that they had been collected afterwards. (Loud laughter.) They were recently taken to task for making them so well, and the

doctor in the case said he would sooner have them any shape they liked as long as they were soft. He thought they could go beyond the effect of appearance in pills, and for his own part he was very suspicious of a pill that was very well made. The coatings were often very beautiful but very insoluble, and he thought if they supplied in the form of wafers a great many of the ingredients that were ordered they would answer much better than pills. He thought Dr. Symes's suggestion for a note a very good one, and mentioned that it was the practice of his firm to have marginal notes in their prescription book.

Mr. VIGIS said he had adopted ever since he was in business the practice suggested by Mr. Atkins of having marginal notes in the prescription-book, and he found the column very useful. Such remarks as "Shake the bottle," and whether the mixture was put into a bottle with divided markings, were inserted. He recollects pretty nearly the first experience he had with regard to pills after he came to Bath. He was rung up in the middle of the night to see if certain pills produced to him were made up properly, and he was informed by the messenger, "You did not make them up; they were made up by somebody in the centre of the town." (Laughter.) Another experience of his was to be rung up in the middle of the night to make two wretched pills, ordered with six ingredients in them, and to be silvered. He recollects on one occasion making them up, and by some accident in silvering them one of them fell on the floor, and for the life of him he could not find it. (Laughter.) The next morning, when he went to look if the bottoms of his boots were dry, there was the pill sticking to one of them. Next day, perhaps, he would be called upon with the remark, "You made up those pills last night; how much, please?" He would reply, "Oh, well, sixpence." "What?" "Yes, sixpence, please?" "Why, I could buy an inch for a penny; surely you don't charge sixpence for two pills?" (Laughter.) The practice he had adopted was never to make a pill under 2 grains, and always to make a note in the book as to the exact weight and every particular it was possible to put down there.

Mr. MARTIN agreed that uniformity was most desirable. It was more easy to allay suspicion by similarity of appearance than to disarrange it afterwards. He thought the 1-grain size for active ingredients was the proper one. With regard to swallowing pills, his old master, Mr. Deane, used to say to people who complained of the difficulty of swallowing a pill that they swallowed every day larger pieces of pudding. He did not think it desirable to mark prescriptions. If they marked the size they would have to mark the excipient and other particulars, and with each dispenser marking it there would be a difficulty in finding out what was the original prescription.

Dr. SYMES said that all that was proposed was to make a small note showing the weight.

Mr. G. BAXTER said his firm used as an excipient for calomel crumb of bread, and made the pill as small as possible. When he was in London, calomel pills were taken by a person that afterwards died, and on a post-mortem examination pills were found in the stomach undissolved.

Mr. WILLMOTT asked whether it was proposed whatever the quantity of the active ingredient, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$ of a grain, to make up the pill to 1 grain? If that were so there would be no possibility of separating them if they got mixed. He did not think it desirable to have a pill too small; a patient would run the risk of supposing that he had not taken the pill at all, but had lost it in some way.

Mr. MACEWAN said in Scotland the custom was to follow Mr. Martindale's injunction, and it was considered a most important thing with provincial houses for the first dispenser to make a note on the prescription. Any London firm which first dispensed the prescription always got the benefit afterwards, and a provincial house, no matter what its reputation might be, was sure to be blackballed if it did not make the pills exactly the same as the London house. The Germans had settled this difficulty by marking on a prescription of that kind the excipients that were used and the quantities, and they had no difficulty in the matter. If that rule were as rigidly followed in this country as in Germany, all trouble would vanish.

Mr. BIRD said that a particular pill-mass should be taken as a standard.

Mr. MARTINDALE, in reply to Mr. Willmott, said they kept such pills as those of arsenic in various strengths, and

took care that the different kinds were not mixed. As an excipient which was easily dissolved he had recommended sugar of milk or tragacanth. There were sometimes objections to their plasticity, but he held that such excipients as those would always be soluble. Nothing was so readily soluble as saccharine substances.

Mr. R. F. YOUNG asked Mr. Martindale whether, when the prescription was over 1 grain, he would use sugar of milk or tragacanth to make it up to 2 grains.

Mr. MARTINDALE said he took the limit at 1 grain. When that was exceeded, it was their duty to make the pill as small as possible. (Hear, hear.)

Dr. THRESH then read the remaining papers on the programme, of which the following are abstracts:—

THE HYBRIDISATION OF CINCHONAS.

By David Hooper, F.C.S., F.I.C., Government Quinologist.

Cinchona hybrids have received a great deal of attention from a number of botanists, and in the present paper the author treats the subject, so far as cinchona is concerned, in the light of the chemical analysis of the barks.

Between *C. succirubra* and *C. officinalis* many hybrid barks are recognised, and have been cultivated and exported to a very large extent. The facility with which these plants made their appearance on the estates seems to imply that forms of cinchona were produced that were more adapted to the climate and situation of their adopted country than the parent forms brought originally from South America. Those having a greater vigour of growth should be propagated, as the robust habit is usually indicative of a richer bark. Hybrids assume the quick growing character of the *succirubra*, yet they contain a greater proportion of quinine than that species. They do not, as a rule, contain the percentage of quinine usual to *officinalis*, but the large quantity of bark yielded by the trees and the high total alkaloids make them equal in value to the best crown barks.

The author proceeded to give the alkaloidal composition of the two species between which hybridisation on the plantations has taken place, the natural stem bark being selected. The results were given in a table representing fifty selected red barks, the quinine ranging from 17 to 27 per cent., cinchonidine from 26 to 51 per cent., cinchonine from 17 to 47 per cent., and amorphous alkaloids from 4 to 23 per cent.; besides these the alkaloid quinidine occurred in traces in red barks, and occasionally reached 0.5 per cent.

The average of the fifty total alkaloids was 6.25 per cent. The table further showed that, with the exception of five samples, all were official barks. During the discussion on the present Pharmacopoeia, a critic remarked that the test admitted barks containing 2½ per cent. of quinine and ½ per cent. of cinchonidine, or those containing ½ per cent. of quinine and 2½ per cent. of cinchonidine with 3 per cent. of other alkaloids, but it was the opinion of the author that it would be very surprising to find such an erratic composition in any one kind of cinchona.

The average composition of the alkaloids, derived from the foregoing analyses, shows the following percentage composition:—

Quinine	1.40
Cinchonidine	2.25
Cinchonine	1.92
Amorphous alkaloids .. .. .. .. .. ..	.63

6.25

In *cinchona officinalis* there is a different arrangement of alkaloids, fifty specimens showing that the quinine ranged from 48 to 62 per cent., the cinchonidine from 18 to 33 per cent., the quinidine from 0 to 6 per cent., the cinchonine from 2 to 16 per cent., and amorphous alkaloids from 4 to 13 per cent.

The crown barks in this table give an average of 5.25 per cent. of total alkaloids, viz.:—

Quinine	2.93
Cinchonidine	1.40
Quinidine .. .. .. .. .. ..	.08
Cinchonine .. .. .. .. .. ..	.42
Amorphous alkaloids .. .. .. .. .. ..	.42

5.25

Calculating from these figures, a hybrid of the two species ought to yield:—

Quinine	2.16
Cinchonidine	1.82
Quinidine .. .. .. .. .. ..	.04
Cinchonine	1.17
Amorphous alkaloids .. .. .. .. .. ..	.56
	5.75

Analyses of twenty-five specimens of hybrid bark (*magnifolia* and *pubescens*) showed that the centesimal composition of the total alkaloids gave on an average:—

Quinine	41.2
Cinchonidine	40.9
Quinidine	0.5
Cinchonine	9.7
Amorphous alkaloids	7.7

The following analyses show the distribution of the alkaloids in individual barks:—

—	Quinine	Cinchonidine	Quinidine	Cinchonidine	Amorphous Alkaloids	Total
1 Hybrid	3.32	2.9	—	.41	.49	7.21
1a	2.58	2.91	—	.43	.63	6.55
2 .. ..	.87	.98	.13	2.96	.70	5.64
2a .. ..	.90	2.75	—	1.05	.40	5.10

The two barks marked "1" and "1a" are in appearance like the pubescent hybrid, and their analysis confirms to some extent the resemblance, in that they contain a large proportion of quinine and cinchonidine in their alkaloids. Nos. 2 and 2a have the habit of the *magnifolia* hybrid, but the presence of quinidine and the large amount of cinchonidine and cinchonine respectively indicate new features in the alkaloidal composition that might be referred to new forms produced by hybridisation.

Some analyses of hybrids grown in the Bengal Government cinchona plantations, at Mongpoo, near Darjeeling, at 3,500 feet elevation, showed the difference between hybrids from foreign localities grown in the same situation. The three kinds were from trees raised from seed from Jamaica, the Nilgiris, and Mongpoo, and each sample was taken in strips from about forty trees of varying types.

—	Jamaica	Nilgiris	Mongpoo
Quinine	2.22	2.47	2.02
Cinchonidine	1.93	1.93	2.50
Quinidine	—	—	.17
Cinchonine .. ..	.75	.53	.66
Amorphous alkaloids .. ..	.64	.59	.31
	5.54	5.62	5.66

In concluding, the author expressed the hope that he might in a future communication give the results of a large number of analyses of the ledger-hybrid, a cross between *C. ledgeriana* and *C. succirubra*.

CARTHAGENA BARK.

By David Hooper.

In the initiatory part of this paper the author gave some historical data regarding the barks bearing the name of Carthagena in the United States of Colombia.

José Celestino Mutis explored the bark region of New Granada in 1772, but it would seem that he was not acquainted with the more valuable species of cinchona.

Alexander von Humboldt, who visited the ports of the Caribbean Sea in 1801, stated then that "the proximity of the port of Carthagena would render the neglected cultivation of cinchona an object of great importance to European trade; while Dr. Karsten, a German botanist, stated in 1844, as the result of a long residence in South America, that he found *Cinchona lancifolia* of Mutis to be a very variable plant, and to furnish barks of very different appearance. This species, he says, affords principally two kinds of barks: the valuable variety called soft Colombian, or Calisaya.

of Santa Fé, and the less valuable variety, called Carthagena, or Cogueta bark, or *Carthagine ligneux* of the French. About the year 1872 Colombian barks were again in the market, and 12 cwt. was shipped to Europe from Carthagena and neighbouring ports. After referring to the production of bark in the United States of Colombia at the present time, Mr. Hooper proceeded to state that Mr. Robert Cross was employed in 1877-1878 to collect plants of the Calisaya Santa Fé on the eastern Andes, and of the Carthagena bark on the Central Cordillera. He brought home five specimens of the latter from Cauca Valley, and one from *Coralis Inza*, in the district of Magdalena, and the latter was the only one that was found to contain quinine by Mr. J. E. Howard, who analysed them, the amounts of total alkaloids being found to be 2.91 3.68, 0.44, 3.76, 4.75, and 2.72 per cent., the fifth of these only containing quinine (1.88 per cent.).

The plants were reared in Kew before they were sent out to India, and this year some bark was taken from an original tree six years old, on the Government plantation, and examined with the other specimens, with the following results:—

—	Government Stem-bark	Ossington Stem-bark	Ossington Root-bark
Quinine	—	—	1.10
Cinchonidine .. .. .. ..	.40	.22	.55
Quinidine	—	—	.36
Cinchonine	1.64	1.60	1.77
Amorphous alkaloid	1.51	1.33	.62
	3.55	3.15	4.40

The appearance of the bark was not very different to that of other species; the outer surface was marked by transverse rings at rather regular intervals and warty exuberances. The powder of the stem, and especially of the root-bark, was decidedly more yellow than other kinds of cinchona. Although this bark is known in some quarters as "hard Carthagena," no particular hardness was noticed in the small sample from the locally-cultivated trees; if the hardness depends upon the heaviness the name would not apply to this bark, as the specific gravity of some of the powder showed it to be like the *Cuprea*, lighter than the red and crown barks. The analyses, however, are of the most importance, and these show the bark to have the same composition as those brought by Mr. Cross from Usenda and Sylvia, in the district of the Cauca, and analysed by Mr. J. E. Howard in 1878.

It is very evident that this variety of Carthagena bark, now being cultivated on the Nilgiris, is a very useless one commercially, and that the better kind, brought from the Magdalena Valley, never reached India at all, or was one of the plants that was unsuited to the climate and died. It is not likely that the propagation of this species will be continued now that its exact value is known.

In concluding the paper the author acknowledged the assistance he had received from the works of various authors, and the statistical notices of the cinchona trade in the *Pharmaceutical Journal* and *THE CHEMIST AND DRUGGIST*.

The PRESIDENT, in moving a vote of thanks, expressed his pleasure that the Conference was selected as the medium for the publication of such important papers as these.

Mr. GROVES said he felt interested in this question of hybridisation, and would like to know if there was any one who could tell him what was the influence of the parent on the nature of the bark. For instance, if a tree was rich in alkaloid, should that not be taken as the parent rather than the other, which might not be so rich?

Dr. B. H. PAUL, rising in response to the President's request, said that he would like to point out that the manner in which the analytical results had been placed before them illustrated in a very graphic style the disastrous results which had followed the introduction of cinchona into India. (Laughter.) No one could judge from the figures given what was their real significance. It so happened that the selection of red cinchona for cultivation by the Indian Government was made during the senseless craze for red bark, and that selection had been followed by great disaster. The reason of that was that the bark contained so much worthless alkaloid, cinchonidine and cinchonine, that no manu-

facturer would have anything to do with it as long as he could get more workable barks. Crown bark was better in this respect, and the effect of cultivation upon the bark had been rather to improve it, but what he wished to emphasise particularly was that the red bark contained so little quinine in comparison to the other alkaloids, that its cultivation had succeeded in well-nigh ruining the planter, the quinine maker, and everyone who had anything to do with it. There was the proof of it: cinchonidine and cinchonine were running all over the table, and they were no use to anybody. As to crown bark, while he said that it was better than the red, he should like to add that it also was of little use unless it gave from 3 to 5 per cent. of quinine. He then proceeded to criticise the figures on the table, pointing out that the quinine was quite swamped by the less valued alkaloids, and his comments thereon created much hilarity, as also did the remark that the attempt to cultivate the comparatively worthless Carthagena bark was another example of the superlative wisdom of the Indian Government. He objected to the propagation of the existence of these South American barks which experience in cinchona culture elsewhere has shown to be of no account, and in concluding again referred to the red bark and its introduction into the B.P., the result of which was that every article containing cinchona was "an officially adulterated article," each 1 per cent. of quinine having from 2 to 3 per cent. of valueless products to keep it company.

Mr. HODGKIN followed in a very similar strain, pointing out to begin with that centesimal figures were exceedingly misleading, and this fact, he regretted to say, he had learnt as a manufacturer of quinine. He was doubtful, too, as to the correctness of Mr. Hooper's figures, and was of the opinion that those referring to the crown bark, for example, had really been got from the examination of hybrid barks. Otherwise he could not account for the ratio of the percentages. Cinchona culture on the Indian Government plantations had not been very successful, and it would not be until the authorities took some hints from the Java planters, who had confined themselves latterly to the cultivation of calisaya hybrids, which gave bark containing as much as 6 and 8 per cent. of quinine. He regretted that nothing was said in the paper about the cultivation of *cinchona robusta*, a hybrid which had sometimes yielded as much as 4½ per cent. of quinine; but what he particularly urged was that the Indian Government should go in for the cultivation of those valuable barks which had proved so successful in Ceylon and Java. In reply to Mr. Groves, he stated that the selection of the parent in hybridisation made a distinct difference—for example, if a calisaya was the parent, it gave a better bark than if a *succirubra* was the parent.

Dr. THRESH having explained that Mr. Hooper's paper gave figures which answered much of the criticism of the speakers, this concluded the solid business of the meeting, and the President proceeded to make a

PRESENTATION OF BOOKS.

These are provided from the Bell and Hill's Library Fund, and this year they consisted of Bentley and Trimen's "Medicinal Plants," elegantly bound in Russia leather, "Pharmacographia," and Hanbury's "Science Papers" being added through the liberality of Mr. Thomas Hanbury, in memory of Daniel Hanbury. The books were presented to the Bath Royal Literary and Scientific Institution, and in handing them over to Mr. Marsh, the president of the Institution, the chairman made a few appropriate remarks.

Mr. MARSH said that he valued very highly the privilege of being present that afternoon, for it was his good fortune, when the Conference visited Bath in 1864, to be the mayor of the burgh, and he could remember the great interest which that meeting had created. He had pleasant recollections of it and could bear testimony to the good work which had been done by the Association during all those years, and the interest which the corporation and the public took in the present meeting. On behalf of the Institution—of which he had been president for thirty years—he thanked the Conference for the gift, and could assure them that the books would be valued, and would be placed in a position where they could always be consulted by local pharmacists.

Mr. PLOWMAN, the curator of the Institution, also expressed his gratification in a few words.

PLACE OF MEETING FOR 1889.

Mr. N. H. MARTIN said that it was not always his pleasure and duty were combined together, but on that occasion he had experienced a considerable amount of pleasure, and he now had a duty to perform on behalf of the chemists of Newcastle and district. Last year, according to custom, it had been resolved to invite the British Association to the northern city, and in consequence of that Mr. B. S. Proctor, the founder of the Conference, had recently convened a meeting of the chemists of the district, and at that meeting it was resolved to invite the Conference to Newcastle. As one of those who had been deputed to convey this invitation, he might give them an idea of what they might expect to find in Newcastle, and accordingly he proceeded to describe some of the objects and places of interest in the neighbourhood, referring more especially to the great Roman wall, the industries of the Tyne, and the chemical industries of the district. Apart

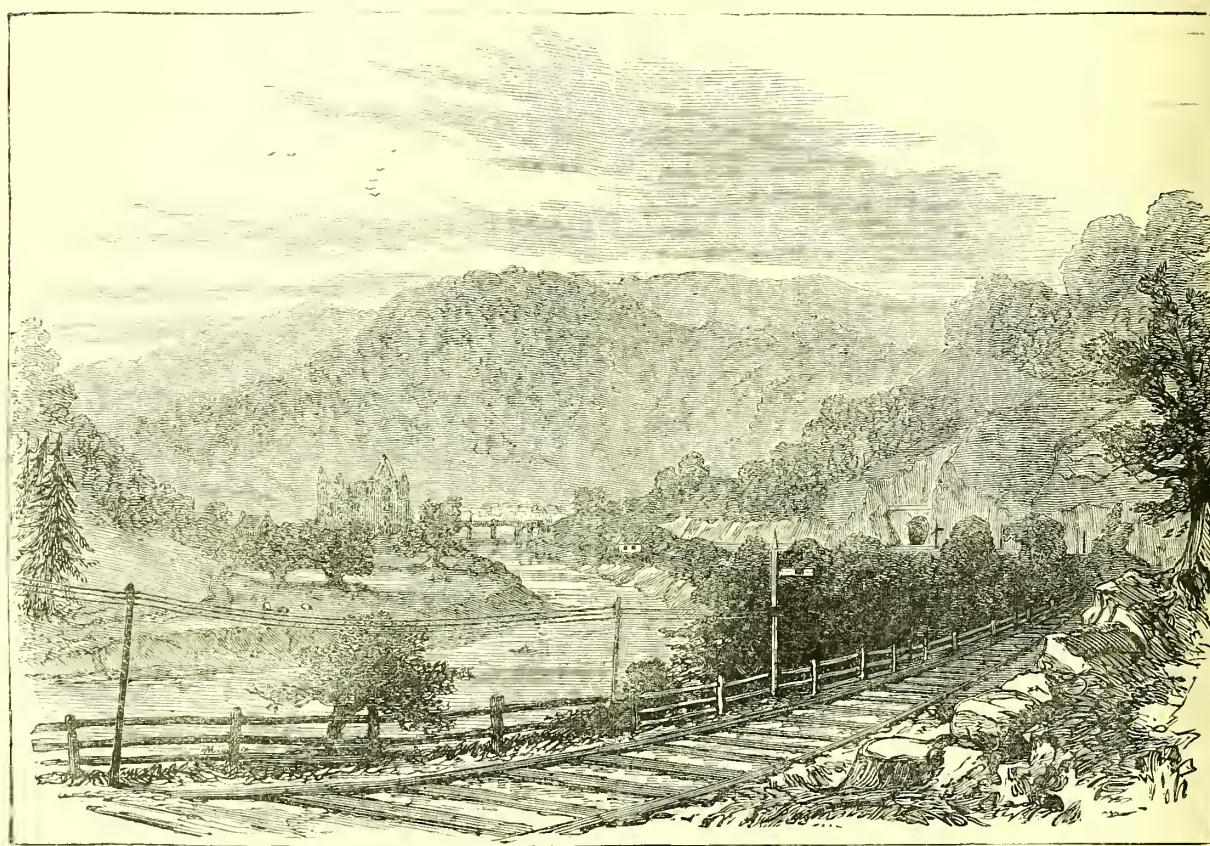
home to its birthplace to die, as some would have it, but to carry on its work with full vigour.

UNOFFICIAL FORMULARY COMMITTEE.

This committee, which at present consists of W. Martindale (chairman), W. A. H. Naylor (secretary), A. C. Abraham, T. Greenish, T. B. Groves, T. Maben, N. H. Martin, R. Reynolds, C. Symes, and J. C. Thresh, was reappointed without alteration. A resolution was also submitted to give the committee power to publish any provisional formulae for new remedies in case of urgency on condition that such formulae were approved by seven members of the committee, and that they might be subject to revision by the Executive Committee.

The PRESIDENT submitted this resolution, which was seconded by Mr. Conroy.

Mr. SCHACHT questioned the expediency of it, and asked what it exactly meant. Had there been any occasion for such authority?



TINTERN ABBEY.

from these things, he considered that there was an appropriateness in the Conference visiting the place of its birth, and he could assure his fellow-members that Newcastle had a kind of parental feeling towards the Conference, that the heart of Newcastle beat towards it with affection—(applause)—and he could assure them that if they responded to their invitation they would get a warm Northern welcome. He regretted that his eloquent friend, Mr. John Harrison, was not there that day to support him in this matter.

Mr. CLAGUE supported the motion, and assured the meeting that his Newcastle friends were looking forward with much eagerness to the visit.

Dr. THRESH moved that the invitation be accepted, and in seconding this motion Mr. G. S. Woolley said that every member of the Conference ought to go to Newcastle in order to do honour to the men who had founded the Conference. The motion was put to the meeting, and in declaring that it was carried *nemine contradicente*,

The PRESIDENT said that the Conference was not going

Mr. R. A. ROBINSON supported these remarks on behalf of some members. He did not like to kick a dead horse, but this was a power which ought to be granted with caution.

The PRESIDENT thought that Mr. Martindale could best explain what was the object of the resolution.

Mr. MARTINDALE accordingly said that what was intended was that if any new drug came into existence and the committee was appealed to for a formula for it they might be able to publish a provisional one. The meeting testified its satisfaction with this explanation by loud applause.

ELECTION OF OFFICERS FOR 1888-89.

Mr. GROVES handed to the President the following list of officers, and there being no other, the gentlemen named were declared by the President to be elected:

President.—Charles Umney.

Vice-Presidents.—M. Carteighe, S. Plowman, Charles Symes, and N. H. Martin.

Treasurer.—Wm. Martindale.

Hon. Gen. Secs.—J. C. Thresh and W. A. H. Naylor.
Other Members of the Executive Committee—J. E. Bruncker, M. Conroy, R. H. Davies, D. B. Dott, A. W. Gerrard, John Harrison, T. Maben, B. S. Proctor, and F. Ransom.

Local Secretary—T. M. Clague.

Auditors—J. Wilson (Bath) and T. Rheed (Newcastle-on-Tyne).

VOTES OF THANKS.

Mr. H. Hutton, of Bath, who has acted as hon. local secretary, and has done an immense amount of work in a manner that has pleased everybody, was the first one to receive the congratulations and thanks of the meeting.

Mr. THOMAS GREENISH having been selected to move the resolution, said that, as a member of the Executive Committee, he could appreciate the manner in which Mr. Hutton had done his work, and the energy which he had put into it. He instanced the great success and the excellence of the luncheons in the Guildhall as a thing which would appeal to every one as an indication of what Mr. Hutton could do.

Mr. NAYLOR seconded the motion, and testified to the satisfactory nature of his relations with the local secretary.

The PRESIDENT, on putting the motion to the meeting, also complimented Mr. Hutton.

Mr. HUTTON, on rising to reply, was received with great applause. He thanked the meeting for the hearty manner in which they had responded to the motion. I hope, he said, you will take it that my *forte* is in work rather than in speaking, but I can assure you that I deeply appreciate the vote of thanks which you have accorded to me, and the words which have been said in respect of it.

Votes of thanks having been accorded to the Mayor and Corporation for the use of the Guildhall; to Mr. Radway, the proprietor of the Grand Hotel, for the use of the Assembly Rooms, and to the Literary Institute,

Mr. GROVES in a few words moved a vote of thanks to the President for his conduct in the chair. Mr. Benger's ability, he said, was highly marked in all that he had done, while his courtesy and urbanity had been appreciated by all. (Applause.)

Mr. ATKINS seconded the motion, and said that his first sentence must be, "The meeting at Bath has been a decided success." (Applause.) It was important, he continued, that that should be clearly put down, lest any should run away with an idea to the contrary, and, he added, the success was largely due to the President. (Applause.) He might say, although Mr. Benger would object to him saying it, that the President had put the Conference under deep obligation to him, he having provided the requisites for the eminently successful conversation on Monday evening at his own expense. (Renewed applause.) Continuing, Mr. Atkins referred to the excellent characteristics of Mr. Benger's nature, to that charm, that kind of animal magnetism, which all felt, and which became apparent when a man put his whole soul and his intellect into his work. This the Conference had appreciated, and he was sure that the frequent applause with which these sentences of his had been received, showed the extent of their appreciation.

Mr. SCHACHT, as one of the oldest past-presidents, put the motion to the meeting, which was carried with loud acclamation.

In responding, Mr. BENDER said that he had accepted the post with little hope that he would fulfil the duties to their satisfaction, far less his own. He was glad that the meeting was a success, and, in closing, referred to the work of the secretaries, Drs. Thresh and Naylor. It was work which extended through the whole year, and well deserved their thanks. (Applause.) When the Conference met in Bath twenty-four years ago an association had been formed, and it was supposed that the association had become extinct, but he was glad to say that it had not, and he believed that Mr. Merrikin would now say something regarding it.

Mr. MERRIKIN explained that the association had shown considerable vitality for four or five years, but, owing to the enervating air of Bath probably, it had become languid, not extinct. (Laughter.) He was glad to say that through the good offices of Mr. Benger there was now some hope for the revival of the association. Mr. Atkins had promised to give them a start by giving them an address, and he appealed to other friends to come forward with help.

And so ended the Conference.

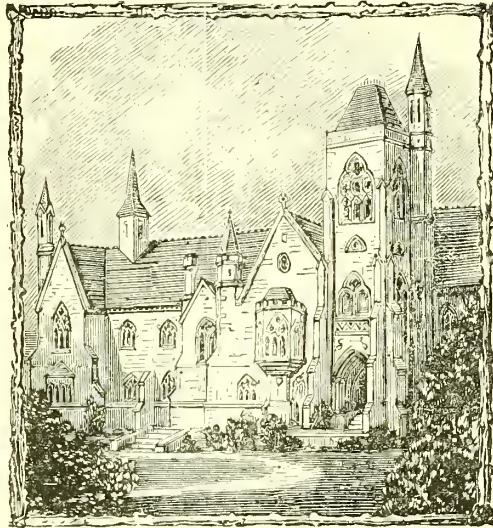
ATTENDANCE AT THE CONFERENCE.

The following is an almost complete list of the members and others who attended the meetings, including all those who signed the attendance book up to the hour that the meeting closed on Wednesday:—

Abraham, A. C., Liverpool	Kernot, Dr. C. N., Brighton and Calcutta
Allen, B., Bristol	Kernot, C. F., Calcutta
Anthony, David, Cardiff	Kinnilmont, A., Glasgow
Appleby, E. J., Bath	MacEwan, P., London
Atkins, S. R., Salisbury	Maitland, F., Stonehouse
Balkwill, A. P., Plymouth	Maitland, P. C., London
Bain, J., Liverpool	Marsh, J. H., Bath
Barrow, W., Cheltenham	Martin, N. H., Newcastle-on-Tyne
Baxter, G., Chester	Martin, Mrs. N. H., "
Beggs, Mrs. G. D., Dalkey, Ireland	Martindale, W., London
Beggs, G. D., " "	Mason, A. H., "
Beggs, H., " "	Matthews, J. H., "
Benger, F. B., Manchester	Meadows, H., Gloucester
Berry, W., Bristol	Merrikin, J. B., Bath
Bell, C. B., Hull	Mills, C. J., London
Bird, F. C. J., London	Munday, John, Cardiff
Bird, Miss, Bath	Naylor, W. A. H., London
Bourdas, I., London	Ough, L., Liskeard
Boutelle, H., Bath	Parker, Christian, Bath
Bowen, J. W., London	Partington, T. J., Bath
Boyce, G., Chertsey	Passmore, F., London
Bright, W., Bath	Patchett, E. C., Nottingham
Bremridge, R., Loudon	Pattinson, W., Bath
Brett, Alfred T., M.D., Watford, Herts	Paul, Dr. B. H., London
Buckle, J., Malton	Payne, J. C. C., Belfast
Burford, S. F., Leicester	Pettiner, Elmer, London
Butt, E. N., London	Phillips, J., Wigan
Candy, J. G., Wantage	Pinch, J. E., Bath
Chaplin, J. L., Wakefield	Pitchford, W., Bristol
Churchill, J., Bath	Piowman, S., London
Clarke, C. G., London	Potter, H., "
Clarke, F., "	Prosser, T. H., Birmingham
Clarke, J. W., Leicester	Ransom, F., Hitchin
Clague, T. M., Newcastle-on-Tyne	Rhodes, G. W., Huddersfield
Coleman, A., Cardiff	Richards, E., London
Colletene, A., Guernsey	Richmond, R., Leighton Buzzard
Collis, A. F., Bath	Robbins, J., London
Cotterell, G. J., Shepton Mallet	Robbins, P. J., Clifton
Cotterell, G. S., " "	Robinson, R. A., London
Conroy, M., Liverpool	Rossiter, F., St. Leonards
Cooper, John, Weston-super-Mare	Sangster, A., London
Crawshaw, E., London	Savage, W. D., Brighton
Cripps, R. A., Birmingham	Schacht, G. F., Clifton
Dott, D. B., Edinburgh	Senier, A., London
Dyson, B. A., J. S., Bath	Shepherd, J. H., Leicester
Dyson, W. B., London	Shepheard, T., Chester
Fardon, Henry, Bristol	Stafford, W., Gloucester
Farley, T., Leeds	Smith, J. T., Radcliffe
Fletcher, J., Cheltenham	Spinney, F., Bournemouth
Fletcher, Mrs. J., "	Stroud, J., Bristol
Forbes, J. W., Bolton	Swingburn, R. H., S. Molton
Gerrard, A. W., London	Symes, C., Liverpool
Glaisher, W. H., "	Taylor, G. S., London
Glaisher, Mrs. W. H., "	Thomas, W. J., Aberdare
Goldsworthy, W. L., London	Thomas, D., Farndale
Green, J., Swindon	Thomson, W., Manchester
Green, J. R., London	Thresh, J. C., "
Green, W. H., Liverpool	Thresh, Mrs. J. C., "
Greenish, T., London	Tingle, J. G., London
Grose, N. M., Swansea	Towersey, A., Clifton
Groves, T. B., Weymouth	Vigis, L., Bath
Gwynnells, E., Woolwich	Ward, G., Leeds
Harland, R. T., Eccles	Wellcome, H. S., London
Hillhouse, Professor, Birmingham	Wellings, W., Liverpool
Hodgkin, J., London	Weston, J. H., Bath
Holmes, E. M., "	Wheeler, C. G., Chicago, U.S.A.
Howie, W. L., Eccles	Williams, J. H., London
Howie, Mrs. W. L., "	Williams, Mrs. J. H., "
Hughes, J., Swansea	Wilkmott, W., London
Hutton, H., Bath	Wilson, J., Bath
Jackson, Dr. U. A., Manchester	Wood, C. G., Oldham
Jameson, W. C., London	Woolley, G. S., Manchester
Johnson, T., Wigan	Wootton, A. C., London
Jones, H. W., Coventry	Wright, J., Birmingham
Jones, M., Swansea	Wright, Theodore R., London
Jones, W., Birmingham	Young, R. F., New Barnet

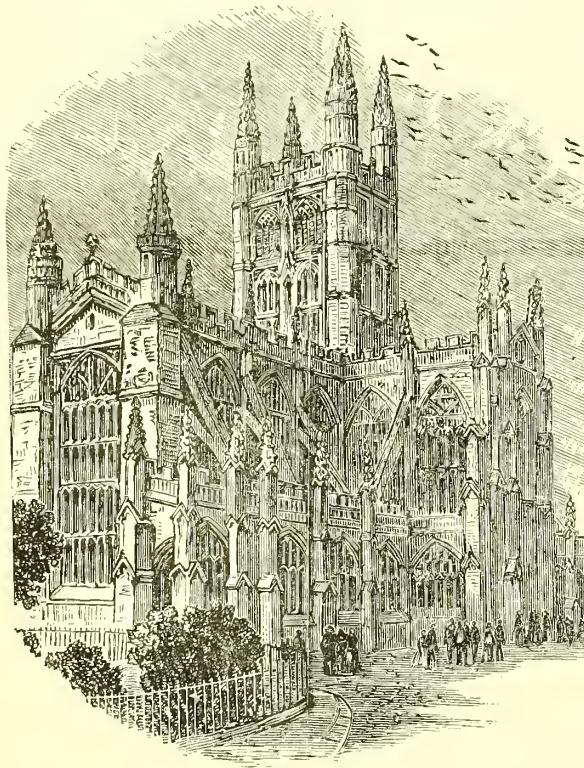
EXCURSION.

THE special train which was engaged to take the Conference party to Chepstow was due to leave Bath at 9.35 on Thursday morning, and at that hour fully 150 ladies and gentlemen were seated in the carriages. By this time the prospects of a good day had brightened. In the early



THE COLLEGE, BATH.

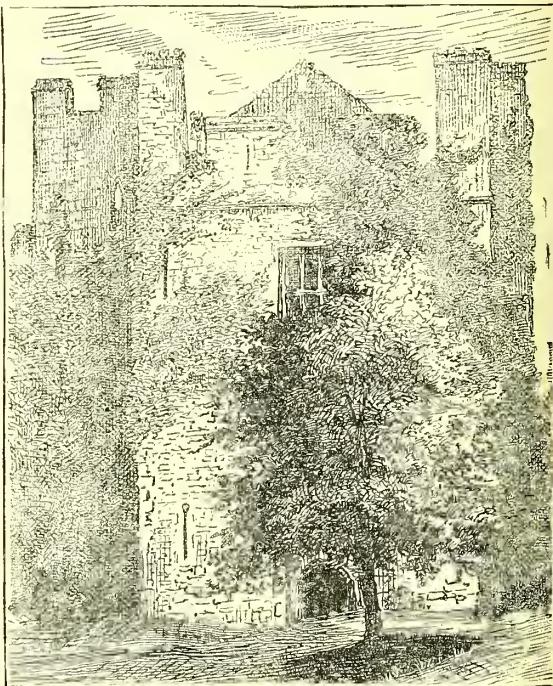
morning rain poured incessantly, and few would have prophesied that the weather would have turned out so charming as it did. The railway journey to Chepstow is through a rather picturesque piece of country, and was much enjoyed



THE ABBEY, BATH.

by the party, which was augmented at Stapleton Road by a number of the Bristol members of the Conference with their friends. The train arrived at Chepstow a few minutes before eleven, and the party was immediately taken charge of by

Mr. Charles H. Clarke, one of the principal chemists of the town, who, in the absence of a professional guide, had undertaken to conduct the party over the Castle and other places of interest in or near the town. The Castle was first visited. This is an old keep, built in the eleventh century, on a high cliff which overhangs the River Wye and commands a view of what may fairly be said to be one of the best of the famous views which make England the resort of foreign tourists. Though now an ivy-covered ruin, the Castle interested the excursionists so much that fully an hour was spent within its walls, a visit being also paid to the ruined chapel in connection with it. We may recall the fact here that this keep and its holders resisted the skill and forces of Oliver Cromwell during the Civil War for such a period that he left the Castle, after its capitulation, in a condition which the admirers of old English architecture have ever since deplored. There are still remaining in the ruined walls many "bits" of sculpture work which indicate the magnificence of the original structure. Having viewed the surrounding country from the top of the tower and the church, the party descended to the iron bridge over the Wye, from which an excellent view of the castle was



CHEPSTOW CASTLE.

obtained. Thereafter the parish church was visited. This structure is mainly in the Norman style of architecture, and was built about 1150. The doorway is an excellent example of the Norman style, as also are the pillared windows and other leading features. The church was added to in 1841, but unfortunately there was little attempt at retaining uniformity of style. The monument to an Earl and Countess of Somerset was much admired by the party, and other monuments in the building were inspected with interest, and after that was done the Beaufort Arms Hotel was sought with alacrity, for here luncheon was to be served at 1 o'clock.

Mr. Berger occupied the chair here, and was supported by the leading members of the Executive Committee. After an excellent lunch

The CHAIRMAN, rising, said he could not die happy without proposing one toast. They all knew how much the Conference was indebted to their honorary local secretary, and he could sincerely say as their President, that they had never been so much indebted to any local secretary as they were to Mr. Hutton, who had also accomplished a feat which an ordinary committee generally failed to do, viz., provided them with a fine day. (Laughter.) He had gently informed Mr. Hutton the previous night that the barometer was falling,

ut he received the cheering reply that "In this district the weather was not influenced by the barometer." (Laughter.) He asked them to drink heartily to Mr. Hutton's health and prosperity. (Great cheers, during which the Chairman's expression of thanks to Mr. C. H. Clarke—the amiable and non-professional guide—was lost to many of the toast-drinkers.)

Mr. HUTTON on rising was received with loud cheers. I am obliged to you, he said, for the kind way in which you are drunk to my health. If I could speak for a quarter of an hour, and I am glad I can't—(laughter)—I could not say more sincerely than I do that I thank you very much. *Applause.*

Mr. SCHACHT then in a few humorous remarks proposed the health of the President, wishing him full enjoyment of his business prosperity, and complimenting him on the ability with which he had conducted the affairs of the Conference.

The toast was enthusiastically received.

Mr. BINGER, in reply, said he would only say two things of the Conference, first, its membership was on the increase, and, second, they were going to Newcastle next year, and he hoped that most of the members would go there and have another jolly good time.

The party then left the hotel and embarked in brakes for Tintern Abbey, by way of Wyndcliff, a hill some 900 feet in height, from which there is an excellent view of the Wye Valley, and this tempted many to take the climb, after which the journey was continued to Tintern, which was reached shortly before four o'clock. There the famous abbey was visited. This ruin of a noble structure, which is said to have originated with the Cistercian monks in the year 1131, stands in one of the finest and most picturesque situations which can be conceived, and the authorities appear to have some satisfaction in saying that it is the finest ruin in Europe, and, therefore, in the world. However that may be, it is undoubtedly a ruin, and the visitors thoroughly appreciated that fact, about an hour being spent in inspecting the abbey. The party returned to Bath by train from Tintern at 5.50, no mishap having occurred to mar the pleasures of the day.

SMOKING CONCERT.

A VERY successful smoking concert was held in the Grand Hotel on Tuesday evening, commencing at nine and lasting until midnight. Mr. Sydney Plowman, F.R.C.S., presided, and the popularity of this recent departure was testified by the presence of many of the reverend members of the Conference. The musical and histrionic talent was excellent, and everything passed off happily. There is only one objection to these concerts, and that is that the presence of gentlemen who have lady friends with them necessitates a lonely evening for the latter, and it is therefore pleasing that Mr. Martin has recognised this, and is to provide a remedy at Newcastle next year.

BANKRUPTCY REPORT.

EDWARD JONES, 59 Camberwell New Road, and 9 New Street, Kennington, Chemist.

THIS debtor applied on Thursday, at the London Bankruptcy Court, to Mr. Registrar Hazlitt to be allowed to pass his public examination, upon accounts showing gross liabilities of 204*l.* 14*s.* 10*d.*, of which 199*l.* 14*s.* 10*d.* is expected to rank, and no assets. Mr. Howells attended for the Official Receiver, and Mr. Foulger for the petitioning creditor. In reply to the former the debtor stated that he filed a petition in the Leicester County Court in 1881, paid a dividend of 3*s.* 6*d.* in the pound, and obtained his discharge. He was then carrying on business as a chemist. Afterwards he came to London and acted as assistant to a chemist until June 1886, when he entered into an arrangement for taking over the business. At that time he had given a bill of sale on his furniture, but had no other debts. He agreed to pay 150*l.* for the business, 10*l.* in cash down and the remainder by instalments. He paid the 10*l.* at the time, and afterwards paid two sums of 100*l.* and 12*l.* respectively, making a total of 122*l.* paid for the business. The sum of 137*l.* now claimed by Dr. Parrott is for judgment and law costs. He had paid accounts which really belonged to Dr. Parrott, but upon his making a counter-claim in this

respect judgment was given against him on the ground that he should not have paid the money without a written authority. The debtor further stated that he had hoped to make the business a good one, but could not tell what had been previously done, except by a statement made by the vendor, which showed a profit of 78*l.* in one year. He only made a profit during the first two months, and had made none since, the business having fallen off through competition and other causes. He eventually sold the business for 36*l.*, and the stock was taken for rent. He expended the 36*l.* received for the sale of the business in payment of rates, a repayment of a loan, and some costs owing to his solicitor. The examination was concluded.

Gazette.

PARTNERSHIPS DISSOLVED.

Adams, J. H., & Co., Stoke-upon-Trent, chemists and druggists.

Landshoff & Co., Phoenix Wharf, Millwall, and Fenchurch Street, chemical manufacturers and oil refiners.

Naylor & Woodhead, Wibsey, North Bierley, Bradford, printers, publishers, and manufacturing chemists.

Thomson, Geere & Co., Mincing Lane, City, Indian rubber and colonial brokers.

THE BANKRUPTCY ACT, 1883.

RECEIVING ORDERS.

Jeffcoat, James, London House Yard, St. Paul's Churchyard, City, and Leicester Villas, Willesden, chemist.

Leaney, Alfred George, Tisbury, Wiltshire, veterinary surgeon.

Tourle, James, jun., Brighton, mineral water manufacturer's manager, late mineral water manufacturer.

FIRST MEETINGS AND PUBLIC EXAMINATIONS.

Leaney, Alfred George, Tisbury, Wiltshire, veterinary surgeon—September 11, Official Receiver's offices, Salisbury; October 12, Council House, Salisbury.

Sears, William Norman (lately trading as the Anglo-Canadian Sign Company), late of High Holborn and Clerkenwell Green, present residence unknown, late general manager of the Patent Letter and Enamel Company, Limited, late vendor of enamelled letters and signs—September 12, 33 Carey Street, Lincoln's Inn Fields; October 16, 34 Lincoln's Inn Fields.

Tourle, James, jun., Brighton, mineral water manufacturer's manager, late manufacturer of mineral waters—September 12, Official Receiver's office, Brighton; September 27, Court House, Brighton.

NOTICES OF DIVIDENDS.

Campbell, Alice, Gateshead, mineral water manufacturer—first and final div. of 3*s.* 9*d.*, September 10, Official Receiver's office, Newcastle-on-Tyne.

Dobson, George, Leicester, chemist—first and final div. of 1*s.* 8*1*_{2*d.*, September 17, 28 Friar Lane, Leicester.}

Higgins, John, Pewsey, Wiltshire, chemist and druggist—first and final div. of 20*s.*, September 10, Official Receiver's office, Swindon.

Lockwood, William (separate estate), the Knoll, near Prescot, Lancashire, chemical manufacturer (trading with J. Leith)—first and final div. of 3*s.* 2*d.*, on and after September 4, Mr. G. Nicholson's, 24 North John Street, Liverpool.

Pilkington, George, Stockton-on-Tees, surgeon—second div. of 3*s.*, September 8, Official Receiver's office, Middlesbrough.

Ward, Joseph (separate estate), Boston, brush manufacturer—first and final div. of 10*s.* 1*1*_{2*d.*, September 5, Mr. C. Lucas's, 8 Bridge Street, Boston.}

Ward, William, & Ward, Joseph, Boston, brush manufacturers—first and final div. of 10*s.* 10*1*₂*d.*, September 5, Mr. C. Lucas's, 8 Bridge Street, Boston.

Ward, William (separate estate), Boston, brush manufacturer—first and final div. of 20*s.*, September 5, Mr. C. Lucas's, 8 Bridge Street, Boston.

ADJUDICATION.

Baker, Alfred, jun., Regent Street, chemist.

ORDERS MADE ON APPLICATIONS FOR DISCHARGE.

Power, Henry D'Arcy, East Dulwich Road, Victoria Road, Chinnert Road, Peckham, and Rye Lane, Peckham, physician and accoucheur—discharge granted.

Smith, Frank Paul (trading as John Smith & Sons), Greystondale, Haltwhistle, Northumberland, varnish manufacturer—discharge granted.

ving tunes have called upon all other sheaves to bow down before it. Mr. Benger is not less loyal to his profession than any of his predecessors; but he significantly avoids the inference which threaded the philosophy of several recent presidential addressees, that pharmacists have some moral claim on society, on the State, and on medical men for exceptional favourable treatment. "For its own sake," says Mr. Schacht, "the public should make haste to see" what sort of men pharmacists are; the relations of pharmacy to the State, as Professor Attfield "are vital to the health and therefore to the happiness of society"; and "a Pharmacy Act which provides for the qualification of vendors of drugs [which, by the way, the British Act does not profess to do] but contains a clause preventing the sale of drugs by unqualified persons, is incomplete": Mr. Greenish and others complain of those who rob the pharmacist of his "legitimate" occupation; and so forth. Far be it from us to discourage any indications of action towards the chemist and druggist on the part of legislature, the colleges, or the public. But as a matter of fact we see very small signs of solicitude on their part, nor indeed do we know of any sound reason for expecting such. The commodities supplied by the baker, the grocer, or the milkman, are as "vital to the health and therefore to the happiness of society" as those provided by the pharmacist; also long as the necessary convenience to society can be met by the usual conditions established by the interaction of supply and demand, so long, we imagine, will society decline to constitute itself a nurse to any one branch of traders. It is that reason we heartily welcome Mr. Benger's more healthy philosophy which in polished paragraphs and epigrammatic sentences tells us in effect, we take it, that each man must look out for himself; that there is plenty of chance for him to succeed even in these days, and that instead of demanding outside help, Acts of Parliament, "the tender care of this Society or that," honour and reward from the world to be paid in advance, "it is time we made a fuller and more extended application of that scientific knowledge, the possession of which we sometimes assure the world is our social characteristic." For the practical application of science, he truly says, the field has enormously increased, and if the pharmacist will fit himself to occupy part of that field, will trust more to the scientific side of his vocation, there is room for him yet.

In Mr. Henry Deane's presidential address to the Pharmaceutical Conference at Bath in 1864 he said, "one half of the chemists in the country do not, as a gross return, take 20s. per day or 365*l.* per annum; and the net profit earned by the other half is little more than suffices to keep body and soul together. Very few save anything, and fewer still enough to live upon in their old days. It is questionable whether one in a thousand can save, by the legitimate exercise of his business in the course of a laborious life, so much as 10,000*l.*" These words were uttered before the days of Stores, and when there was a very respectable profit made out of the sale of patent medicines and proprietary articles. If Mr. Benger had cared to commit himself to statistics, he would not, we dare say, have displayed a condition of things worse than Mr. Deane declared them to be in 1864, and on his view that the field had enormously increased, he would certainly have maintained that a skilful pharmacist's chances are improved in like proportion. But, says the President, the pharmacist's work must be real; he must have something more than a belief to show for it. Let his work be but "a very slight improvement" or even the application of the labours of others, the President leads the pharmacist to expect that for such, material success is, to say the least, probable. We are not quite so sure that "the label" is not as important a factor as the real work, so far as commercial success is con-

cerned, but the morality of Mr. Benger's contention must be admitted. A full discussion on the ethics of labelling is a tempting subject on which, however, we must not enlarge. In the last number of the *Nineteenth Century*, Mr. Leslie Stephen says it is a matter of dispute whether truth and falsehood are not so closely intertwined that we must tell a lie as a vehicle for truth. We confess that we do not quite appreciate this theory, but such as it is we commend it to label authors generally as a hopeful sort of defence.

One piece of protection Mr. Benger seems to very definitely demand. This is that "the wholesale manufacturer should possess the same legal qualification as the retail pharmacist, or, to put it another way, it is the qualified pharmacist only who should be the producer of pharmaceutical preparations, whether supplied direct to the public or through medical men." We can hardly think that Mr. Benger has carefully thought out the proposal he here puts forward. Where would he draw the line? Would he, for instance, seriously maintain that no one should manufacture sulphate of quinine or calomel until he had passed the Minor Examination of the Pharmaceutical Society? Or is it the solution of the quinine in orange wine on a wholesale scale which he would prohibit to any but "qualified" men. We repeat that the British legislature has never yet declared that vendors of drugs must be qualified. It has named certain poisons the vendors of which are to be qualified, and it gives the public, by protecting certain titles, a means of distinguishing which are the qualified and which the unqualified vendors of drugs. One of the objects of thus providing a class of qualified vendors of medicines is that they shall stand between the possibly unqualified manufacturer and the possibly too-innocent public.

In the latter part of his address Mr. Benger brought together information collected from correspondents of undoubted authority in reference to pharmaceutical educational requirements on the Continent, in America, and in the colony of Victoria. The imposing range of scientific and literary acquirements which is considered essential as the minimum equipment of a pharmacist by most European governments, was forcibly presented in this *résumé*; but the anticipated moral from it was, perhaps intentionally, conspicuous by its absence. Beyond an almost formal expression of desire for a better preliminary education of chemists' apprentices, the President avoided the question suggested by his enquiries, whether the education which in this country is considered sufficient for a bishop should be regarded, as it is on the continent, as essential to the occupation of a chemist and druggist.

The resolution of this problem which, however, can hardly be said to come within present practical pharmaceutical politics, requires much more information than is available. The commercial results of the best pharmaceutical businesses in this country and on the Continent would have to be compared. This, at least, would be a consideration of weight with some investigators. So too it would be of interest to learn the opinions of experienced employers on the relative merits, as actual dispensers, of the university-trained German or the shop-trained Britisher. Whatever answer might be given to such enquiries, however, the value and interests of the compilation which Mr. Benger has been at the pains of preparing are indisputably great. So too in regard to the other parts of this very able paper. It suggests many points on which controversy might be raised; but all pharmacists will agree that its literary brightness, the originality and humour with which topics of perennial trade interest are handled, and the encouraging breeze of healthy hopefulness which pervade it, all tend to make the address this year a notable one among our pharmaceutical chronicles.

THE CONFERENCE PAPERS.

THE Conference was exceptionally fortunate on this occasion in starting well the first day. After disposing of preliminary business and the President's address, to which we fully allude elsewhere, there were on the agenda seven papers, the report of the Unofficial Formulary Committee, read by Mr. Martindale, being taken as one. The discussions on six of these papers were so good that the reading of the seventh had to be postponed until Wednesday. So far, therefore, the members had every reason for satisfaction, and the larger audience which the papers now reach is certain to profit by the proceedings as a whole. To-day we print the papers in some cases fully, and in others at a length commensurate with the practical character of the subjects, while the discussions are given as nearly as possible verbatim. It will facilitate the perusal of our report if we comment generally on the chief topics which are therein dealt with.

The committee which has worked under Mr. Martindale's direction have, in the course of the year, designed sixteen new formulae, and have materially altered the formula for cod-liver oil emulsion, as the old one gave very uncertain results, and could never be called an emulsion. A couple of eggs have helped to make the preparation an acceptable one, while the addition of saccharin and oil of bitter almonds instead of cassia has improved the flavour and taste considerably. The acetous preparations of ipecacuanha are on a line with proposals made some time ago by Mr. Peter Boa, and are useful additions to this class of remedial agents. The same may be said regarding the preparations of free phosphorus, which are made in such a manner that oxidation is reduced to a minimum; yet the solvent character of glycerine might have been utilised in the preparation of the elixir phosphori. The saccharin elixir is practically the provisional formula proposed by Mr. Martindale, which has been a bone of contention within the camp for some time. The only addition to the fluid extracts is that of triticum, the strength of it being 1 in 2. The ammoniated liniment of opium is directed to be allowed to stand a week before filtration, but otherwise there is no alteration of this excellent liniment. Strong solution of hypophosphite of iron is a new preparation, the introduction of which has necessitated the alteration of all the preparations of hypophosphites. The hypophosphite of iron is to be made by the double decomposition of sulphate of iron and hypophosphite of barium, a little sulphuric acid being added to ensure the presence of free hypophosphorus acid. We must confess to some suspicion regarding this innovation. Barium sulphate cannot possibly exist in the liquor to any appreciable extent, but there are better processes for the formation of ferrous hypophosphate, and any process in which sulphuric acid enters is also very liable to oxidise the hypophosphorous acid with the elimination of the products of the reduction of the sulphuric acid. Of the new syrups those which will create some interest are the preparations of the hydrobromates, which are ostensibly imitations of factory-made products. Syrup of wild cherry is a useful addition to the Formulary, as also are the preparations of capsicum. In submitting his report Mr. Martindale added some useful comments, and the vote of thanks which was accorded to him and his colleagues showed that their work is appreciated in this country and on the other side of the Atlantic. It is also gratifying to notice that the publication of the first edition of the Formulary has resulted in a substantial profit to the Conference.

In a discussion arising from a paper read by Aconitum Napellus. Mr. John Williams at Birmingham two years ago, the wish was expressed that some definite work might be done in the cultivation of the true *Aconitum*

Napellus, as the aconite root of commerce is of so variable a character that it is extremely difficult to arrive at any satisfactory conclusion as to the true character of the root. The work necessary in this direction was undertaken by Mr. E. M. Holmes, Curator to the Pharmaceutical Society, whose garden is at Sevenoaks. Mr. Holmes's first difficulty was in obtaining plants, there being no less than twenty-nine different varieties of aconite. Three typical plants were at last obtained, and these were cultivated, care being taken to observe the characters of the leaves in their young state. When the true plant is about 6 or 8 inches high the leaves form a dense tuft, the segments spreading and drooping at the ends, whereas in *A. variegatum* and *A. paniculatum* the leaves are rigid, do not form a tuft, and are otherwise different. Careful observation of the three kinds under cultivation showed that but few of them were not the true aconite. But others had apparently been hybridised, and these were carefully eliminated. Hybridisation seems to be the stumbling block in the cultivation of this plant, and as *A. paniculatum* is reputed to contain only inactive aconitine, crossing of *A. Napellus* by the former must be particularly detrimental to the value of the root. Mr. Holmes described the relative pungency of the roots of his three varieties, determined in a rough way, and called special attention to the large proportion of active rootlets which became detached from the tap-root in harvesting, the inference being that these, if possible, should be saved. He also suggested that the plant should be propagated from the root, as the seeds do not develop when sown. Professor Hillhouse, of Birmingham, opened the discussion on this paper. He pointed out several probable sources of error, which Mr. Holmes afterwards cleared up, and insisted upon the removal of the flowers from the plants at an early stage so that the full activity of the plants might be concentrated in the roots. Several members described the localities in which the plants grow, and Mr. Greenish, speaking of the German aconite, told the meeting that the collectors go out to the mountains with a bag on their shoulders and collect all sorts of things at the same time, afterwards sorting them, so that it is possible that gentian may find its way into aconite and *vice versa*. There was much said about the chemistry and physiology of aconite which was quite to the point, but Mr. Greenish's remarks effectually showed how important is the line of investigation which Mr. Holmes is engaged in.

The papers by Mr. Dott and Dr. Stockman dealt with the difficulties which they had experienced in the formation of a number of the derivatives of morphine, as well as the physiological effects of the derivatives when they were obtained. The constitution of diacetylmorphine was discussed at some length, and its action was stated to be similar to, but more powerful than monacetylmorphine. So also in the case of benzoylmorphine, while the dibenzoyl derivative was found to be so unstable as to render it difficult to test its properties, although these were found to be like acetylmorphine. The preparation of morphine-sulphuric acid—which is morphine with OH replaced by HSO_4 —and of chlorocodide was also described, but these have not yet been experimented with physiologically. The authors of this paper, rather than the paper itself, were the subject of the discussion which followed, the President initiating it by saying that it was a most desirable thing to have medical men working in this manner with accomplished pharmacists. Dr. Thresh agreed with this, it being his opinion that this was the only way in which the scientific treatment of the disease could be advanced, or that we could be relieved from empirical methods of treatment. Mr. Plowman—a happy combination of both classes—created some amusement by dissenting from the latter part of Dr. Thresh's

remarks, but he added his compliments to the work of the authors and the importance of the alliance, the moral of the discussion—if that we may call it—being, when the pharmacist wishes the physician to co-operate with him he must catch him young.

Following this was a very practical subject Extraction by Dr. Symes—viz., extraction by pressure. by Pressure. The writer's object in this communication was to direct attention to the fact that whilst we are absorbed with improvements in percolation and percolators, we are inclined to overlook the fact that many substances, such as leaves, can be more easily exhausted by pressure, the product usually being more active than when percolation and evaporation are adopted. In support of this he gave the result of observation and experience during some years, rather than that of any special experiments. Thus a fluid extract of senna was found to be much more active when the drug was simply treated with a mixture of alcohol and water than with water, and submitted to hydraulic pressure, than when it was prepared by percolation and the percolate evaporated. The same was found to be the case with *Convallaria Majalis*. The paper led to a lively and interesting discussion, in which Dr. Symes's views were fully supported as regards some special cases, such as senna; but the opinion seemed to be that the principle advocated was a retrogression, and that percolation and careful evaporation at a low temperature are the directions in which pharmacists ought to work in order to obtain reliable liquid medicaments. There were also some interesting remarks on the kinds of presses which are required in pharmacy, and Mr. Howell Williams incidentally stated that he had found Dr. Symes's method the most satisfactory for the exhaustion of the pungent principles of ginger with weak spirit.

In his paper on this oil, Mr. W. West gave the Oil of Cajuput. results of the examination of fourteen commercial specimens, which varied in specific gravity from 0.9226 to 0.9240, and in boiling point from 174° to 174.5° C. The bluish green colour, which slightly varied, was found to be due to the presence of copper, which was proved by shaking with a little dilute sulphuric acid, separating that and adding ammonia in excess. The writer looked for camphor oil and eucalyptus oil, which he thought were possible contaminants, but got no indications; his results, as a whole, leading up to the conclusion that commercial cajuput oil is pure. The use of the oil as a substitute for clove oil in microscopy was also referred to. Dr. Thresh, in commenting on the paper, expressed regret that the author had not determined the specific rotatory power of the specimens; this being, in his opinion, an excellent means for ascertaining whether oils are adulterated or not, and in this view he was corroborated by other speakers. He also commended the use of the oil in microscopy, which Mr. Naylor said was not quite new, for he had redistilled the oil for this purpose fifteen years ago. It was also elicited that the redistilled oil is colourless, that the commercial oil owes its blue colour to the copper stills which are used by the distillers, and that if those stills were not used the oil would yet have a green colour as many myrtaceous oils have. The discussion was somewhat lively at times, but in this respect it was eclipsed by that which followed.

Mr. Michael Conroy's paper on the adulteration of lard with cotton seed oil was both Adulterated Lard. amusing and practical. He showed how the American press, or a section of it, have tried to prove that the addition of the oil to lard is a grand invention, calculated to benefit the human race. The "invention" has been highly successful from a monetary point of view, and

perhaps half the lard which comes into this country is of this kind. Mr. Conroy, however, does not appear to have found any of it in pharmacy, and he purposely worked with a sample of pure lard to which he had added 5 per cent. of cotton seed oil. This was easily distinguished from pure lard by adding to about 100 grs. of it in a dry test tube 20 gr. measures of a solution composed of 5 parts of silver nitrate and 1 part of nitric acid in 100 parts of rectified spirit. On gently heating the mixture adulterated lard becomes of an olive brown colour and pure lard remains white. The specimens shown proved the correctness of the test, but in the discussion doubts were thrown upon it by Mr. William Thomson and Mr. Ward. The former made interesting comments on all the approved tests, more especially on Beschi's and the iodine absorption tests, and these were directed to show that it is not so difficult to prove the presence of cotton seed oil, the difficulty is to know when it is absent. Then there followed a great deal of talk regarding the question of adulteration generally, and the exclusion of such articles as that under notice from commerce, except under proper designation. This led to the manifestation of a general feeling that cotton seed oil, as such, is not a bad thing, but that it is highly desirable that it be put on the market under its own name. It was also elicited in the discussion that the oil is only added to the lard after the lard oil has been separated from it, the vegetable oil taking, in short, the place of the animal oil. Mr. Conroy effectively replied to his critics, and put in a good word for Irish lard, the purity of which, in spite of Dr. Thresh's humorous remarks, appears to be beyond suspicion. With this was completed the solid work of the first day's meeting, the members departing to inspect the baths, the Abbey, and other objects of interest in the town.

The first paper on Tuesday morning was contributed by Mr. Wm. Kirkby on "The Microscopic Characters of Dalmatian Insect Powder."

In this paper the author described the appearance of the typical epidermal papillæ of the ligulate florets, and the appearance of the pollen grains, easily seen by the microscope. The discussion on this paper was long and interesting, several gentlemen who are connected with leading wholesale houses contributing to it. Mr. Conroy, for example, told the meeting some of his experience with the powder, showing that the adulteration of it with fustic is a substantial reality. His method of testing the powder by the "fly test," and Mr. Howie's "beetle test," although they induced some laughter at the time, appear to be such tests as the majority of chemists can apply. There was a good deal said regarding the action of the powder—viz., as to whether it kills by producing asphyxia, or whether it obliterates locomotion owing to its action as a local irritant; the balance of opinion resting on the former view.

We fully remarked upon the seeds of this plant Cassia Tora. in our issue of last week. Mr. Elborne's paper was mainly a reproduction of what has already appeared in this journal, but he added a proximate analysis of the seed, and came to the conclusion that their active principle is emodin, a chrysophanic-like body. Mr. Naylor, however, considered that the experiments recorded in the paper did not fully warrant this conclusion, and suggested that the matter should be further investigated.

In his paper on the solubility of this alkaloidal Caffeine Citrate. salt Mr. Gerrard stated that, having failed to get a 10 per cent. solution of it, he had determined its solubility, and found it to be 1 in 30 at 14°—16° C. The Pharmacopœia states that with a small quantity of water the salt forms a syrupy solution, but experiment showed that this condition, when 4 parts of water are used,

is exceedingly transient, the mixture rapidly setting into an unpourable mass. Mr. Gerrard severely commented on this pharmacopoeial error, and took it as a peg upon which to hang a demand that pharmacists should be called in to assist in the compilation of the Pharmacopoeia. Mr. Moss's note stated that a sample of "citrate of caffeine, old B.P.," which he has recently examined was simply pure caffeine, and called attention to the increased amount of the remedy which an ordinary dose of this would contain. A very profitable discussion followed this paper. It was shown, for example, that the state of things revealed by Mr. Moss is not at all uncommon, Dr. Thresh having obtained through ordinary commercial channels specimens of citrate which were pure caffeine. It was further elicited during the discussion that the citrate itself is extremely variable, being sometimes basic and, as a rule, far from constant as regards the proportion of citric acid which it contains. This condition of things may, as was pointed out by Mr. Martindale, be avoided by making popular one of the stable salts, such as the nitrate, and in this direction it appears desirable to work.

Mr. Wright's notes gave rise to important Laboratory discussions. We need only call attention under Notes.

this heading to those on *Acetum Ipecacuanhae*, *Syrupus Ferri Phosphatis*, and *Unguentum Hydrargyri Oxidi Flavi*, all of which relate to subjects of everyday importance, which most pharmacists can appreciate, and which many are capable of producing, but do not. We may here reiterate the remark which was made last week—that it is in this direction that the members of the conference who do not, as a rule, contribute to the proceedings, will find it possible to achieve some useful improvements in pharmacy. Dr. Thresh is of the same opinion, and in replying to the remarks on Mr. Wright's notes he urged the younger members to follow his old pupil's example.

Cascara Sagrada. It was Mr. Wright's note on the preparation of a tasteless fluid extract of Cascara Sagrada which excited one of the most animated discussions of the meeting. It will be remembered that we published in the early part of this year a paper by an American pharmacist, in which it was stated that this extremely useful but nauseous drug may be rendered tasteless, without affecting its therapeutic properties, by treating it with calcined magnesia. Mr. Wright has tried the process, but finds it to remove the aperient properties as well as the taste; by a slight modification, however, he obtained a fluid extract which was all that could be desired, so far as activity and freedom from bitterness are concerned. The discussion showed that trial of the process has been very general, and, accordingly, opinion was not by any means one-sided. Considering the discussion generally, however, it seems that the bitter taste may be removed from Cascara Sagrada as Mr. Wright suggests, and that it still retains aperient properties, but that these are more of a tonic than a purgative character.

Syrup of Hypophosphites. In a note on compound syrup of hypophosphites Mr. Dott and Dr. Inglis Clark gave the results of, and described the processes employed in, the analysis of a sample of syrup made by the firm with which they are connected, and of three syrups made by other firms. The figures regarding the latter indicated that the statements on the labels were inconsistent with the analytical results. It transpired that the American preparation was not included in the condemnation, but that one Scotch and two English firms must look to their laurels—or revise their labels.

Japanese Peppermint. In his paper on English distilled oil of *Mentha arvensis* (the Japanese variety) Mr. Moss told the members that he had distilled 205 lbs. of the fresh herb grown by himself in the south of London, and

had obtained 4 oz. of oil from it, or 0.125 per cent. This oil was of a yellow colour, had a specific gravity 0.9107, boiling point beginning at 339° F. and rising to 402° F. These results confirm the data already published by Mr. Todd, of Nottawa. A test proposed by the latter for the certain detection of the oil of *M. piperita* was tried on this oil, viz., 1 drop of the oil in a mixture of 25 drops of alcohol and 1 drop of nitric acid (specific gravity 1.200) should give in a few hours a permanent green colour. This colour, it was found, was not obtained with the oil of *M. arvensis*. The discussion on this paper did not add to what is already known of the oil.

The examination of the root of this plant by Cephaëlis Tomentosa. Mr. Ransom resulted in the discovery of a trace of emetine, but not sufficient to warrant its introduction into medicine. Incidentally the author remarked that as good a test as any for emetine is the formation of insoluble nitrate of emetine on the addition of an alkaline nitrate to the solution. The paper elicited no discussion.

Ferri Citras. A volunteer paper on this much-used scale preparation was submitted by Mr. R. H. Davies, et Quinina² and it contained the results of the examination

of a number of commercial specimens for amorphous and inferior alkaloids, but while the paper showed that the English-made product is better than the foreign, the exact object of the paper was not consummated. As showing how long an impression may last, Mr. Conroy pointed out that the author's assumption that the Pharmacopoeia requires the preparation to contain 16 per cent. of alkaloid is erroneous, that having been altered to 15 per cent. owing to the representations made by Mr. F. W. Fletcher.

The Size of Pills. Of what size should the smallest pills be? This, practically, was the germ of another volunteer paper submitted by Mr. Austen, of Birmingham. Assuming that there is no recognised rule among dispensers for the size of pills containing fractions of a grain of patent medicines, the author discussed the relative merits of 1 grain and 2 grain pills, and decided on the former. His decision received the general support of the meeting. At the same time the feeling was generally expressed that the dispenser who first compounds a prescription should indicate on it what size of pill he has sent out. This is a rule which is of as great importance as any unwritten rule as to size, and it is a pity that it is not more generally adopted.

Cinchona. Two excellent papers by Mr. David Hooper were read by Dr. Thresh, and we may refer those interested to the abstracts of them which we publish on another page. Two authoritatis discussed the papers, and showed how utterly the Indian Government has failed to meet the demands of the markets by cultivating species which do not afford barks that are liked by the quinine manufacturer. This emphasises in a marked manner how wise the Java planters have been in latterly devoting themselves exclusively to those barks which are rich in quinine.

These papers concluded the solid work of the meeting, and we cannot better sum up the whole matter than in the words of Mr. Atkins—"The Meeting of the Conference at Bath has been a decided success."

THE BRITISH ASSOCIATION.

The Bath Meeting of the British Association seems likely to prove an attractive one. Fully two thousand ladies and gentlemen listened to Sir Frederick Bramwell's inaugural address, and the highly popular engineer secured a great success. The subjects of machinery, of prime motors, and

of engineering generally on which he discoursed are more generally appreciated than those of the higher mathematics, chemistry, or geology with which, it must be confessed, audiences have of late years been a little bored. Sir Frederick Bramwell, too, cultivates a certain rollicking style of oratory which amid the somewhat arid realms of serious science is sure to attract. His address on this occasion was undoubtedly interesting, though it cannot be declared to have been remarkable. It was, in part, illustrative of the importance of the "next-to-nothing" in mechanics, and, in part, an apology for and laudation of the profession of the civil engineer. Section G, which deals with mechanics, is looked upon, it appears, with a little suspicion by A, B, C, and the rest, on the alleged ground that it only applies the discoveries of others and does not itself contribute much to original research. The author easily proved that the application of science was an important part of its "advancement," the object of the Association; but we suspect that the accusation was introduced mainly for the purpose of making a place for the anecdote of the pure scientist who proposed the toast, "Here's to the latest scientific discovery; may it never do any good to anybody."

Sir Frederick was very sarcastic on the Electric Lighting Act; a measure which, in his view, was facetiously described as one intended to "facilitate" electrical lighting. He anticipates that heat engines worked by the combustion of gas or perhaps of petroleum vapour, and not by the intervention of the vapour of water, are to be the motors of the future. He reminds engineers that the best of our modern steam engines only utilise about one-sixth of the work which resides in the fuel consumed, and thus he shows that the field for invention is still a wide one. He also suggests that the time is coming when little engines will be adopted for household use and employed for many purposes for which hand labour now alone serves.

We do not need to follow the president's address further. It has been printed in all the daily papers and has doubtless been read already by all who are interested in scientific progress.

A good many chemists will be interested in the address of Professor Tilden, not so long ago himself in the ranks of pharmacists, to the Chemical Section. Dr. Tilden, as president of that section, pointed out the practical uselessness of any attempt to survey the ever widening field of the science of chemistry; his subject was, in the main, a criticism of modern chemistry teaching. Before the time of Liebig, Dr. Tilden reminded his hearers practical work in the laboratory was rarely obtainable by chemical students. When Liebig went to Paris in 1823 Gay-Lussac at first refused to allow him the practical instruction in the Ecole Polytechnique which he applied for, and he only obtained it through the intervention of Humboldt. Davy had had no such opportunity previous to his appointment as assistant to Dr. Beddoes, of Bristol. Liebig at Giessen, and subsequently Dr. Hoffmann at the College of Chemistry, introduced the modern system of teaching chemistry by laboratory work.

England, Dr Tilden thinks, is now as well provided with places of instruction for the study of chemistry as any country in the world. But the professor complains that increased opportunities for study, a considerable supply of capable teachers, and an enormous body of students have not produced such an amount of original investigation, or even of accurate analytical work, as might reasonably be expected. And why is this? It is not the fault of the professors, we are told to assume, but it is the fault of the ignorant and indifferent public, which has "no intelligent feeling in favour of learning, nor indeed of any sort of education, unless there is expectation of direct returns in the form of obvious practi-

cal results. It is this which animates the present popular movement in favour of so-called 'technical' education. That part of the attention of the nation which can be spared from the contemplation of Irish affairs is concentrated upon the problem of how to make every little boy learn the rudiments of chemistry, whether he likes it or not, whilst there are comparatively few people interested in the question of how to provide means and instruction for those who are capable and desirous of attaining to a mastery of the subject. Moreover, the public have not yet grasped this truth, that, so far as chemistry is concerned, it is of very little consequence to the great metallurgical and chemical industries whether the workpeople do or do not know a little chemistry, though it is important that they should be intelligent enough to obey orders. What is wanted is that every manufacturer and manager should himself be an accomplished engineer and chemist, trained to observe, to reason, and to solve problems for himself."

This ignorant public cannot be got to understand the necessity for teachers to engage in research. There is actually on record the case of professors being engaged at a certain college founded, according to the declaration of its promoters, "by the people for the people," wherein it was announced in round terms that original research was not wanted, as the college was "for the good of the many and not for the advantage of the few." This example of ignorance, says Dr. Tilden, is only remarkable by reason of its audacity. It is to be regretted that Dr. Tilden should adopt such an injured tone in reference to the despised public who have the audacity to want to have that for which they pay, for much of his address is excellent. Speaking of general teaching of chemistry he declares that in all classes of schools, even where chemistry is supposed to be taught, there are but few places where serious employment is found for the well-trained chemist. He could point to several schools which claim the position of first-rate, where chemistry is taught by masters who have never studied the subject at all, but who are, he supposes, allowed the traditional "ten minutes' start" with the book. In yet other prominent schools the chemistry and other branches of science are taught by a peripatetic South Kensington teacher, who arrives weekly with his box of tricks. The vastly extended range of science and the preliminary studies necessary to it lead to the inference that it now takes longer to make a chemist than formerly, and Dr. Tilden reckons that five years are now necessary before he is likely to be of much use.

ACCORDING to the *Levant Herald* the Greek Government has been lately experimenting in the cultivation of rose trees on a large scale, with the intention of manufacturing attar of roses.

LE PAGE'S LIQUID GLUE.—In the case of the Russian Cement Company *v.* Le Page, decided recently by the Supreme Judicial Court of Massachusetts, it appeared that Le Page formed a company to which he sold his business with the right to use his trade-mark, "Le Page's Liquid Glue." He afterwards left the company, and made use of the name, "Le Page's Improved Liquid Glue;" but the court thought that this was too bad of Le Page, and has granted an injunction preventing him using the latter name.

A WELL OF VINEGAR.—A farmer in the State of Indiana recently dug for water, and when he came to it, lo! it was vinegar. This phenomenon has been vigorously discussed by chemists, who tried to account for such a liquid coming from the bowels of the earth, but all theories have been set aside, owing to the substantial fact that some twenty years ago the farm was owned by a man who had an extensive orchard. The apple crop was large, and he made several hundred barrels of cider, to be converted into vinegar. While the fluid was fermenting, about one hundred barrels burst and their contents were lost. The cider sank into the ground until it reached an impervious stratum of clay, where it lay until the well was dug on the same spot.

THE BOARD OF INLAND REVENUE'S REPORT, 1887-8.

THE report of the Board of Inland Revenue for the year ending March 31, 1888, has just been issued. A total revenue of 55,916,974*l.* is reported: this is a net decrease against the previous year of 206,786*l.* Excise duties are 412,637*l.* better, and stamps 1,276,617*l.* higher than in 1887; but income-tax, in consequence of the reduction from 8*d.* to 7*d.* is 1,896,040*l.* lower. Land-tax and inhabited house duty are also somewhat less productive.

SPIRITS.—The quantity of British spirits distilled in the year was 39,040,365 gallons. In 1886-7 it was 37,666,818 gallons. In the two years before 1886 the quantity distilled had declined by two millions and one and a quarter millions respectively.

METHYLATED SPIRITS.—The employment of methylated spirits in the arts and manufactures continues to increase. The quantities methylated were: England, 2,304,306 gallons (1887-8, 2,224,243 gallons); Scotland, 461,054 gallons (1887-8, 448,372 gallons); Ireland, 2,132 gallons (1887-8, 760 gallons). The licensed methylators number 16 in England, 2 in Scotland, and 1 in Ireland. There are 7,806 retailers in England, 827 in Scotland, and 260 in Ireland.

PATENT MEDICINES.—Stamps yielded 191,475*l.* in 1887-8; in 1886-7 the amount realised was 179,508*l.* The previous year the increase was merely nominal (789*l.*); the advance this year is therefore considered noteworthy by the Commissioners. There were 20,072 licensed dealers in England, and 1,528 in Scotland. The year before the numbers were 19,440 in England, and 1,471 in Scotland.

ALKALI WORKS (Certificates of Registration).—In 1886-7 1,081 were issued, realising 3,509*l.*; in 1887-8 the number of works registered was 1,101, and the duty received 3,579*l.*

COFFEE MIXTURES.—The trade in coffee mixtures seems to be dying out. In 1882-3, when the $\frac{1}{2}d.$ and 1*d.* labels were first issued, a revenue of 6,344*l.* 2*s.* 2*d.* was collected. The revenue has steadily decreased, and last year amounted only to 2,855*l.* 12*s.* 8*d.*

STILLS.—Licences to chemists to use stills are issued to 738 persons in England, to 125 in Scotland, and to 25 in Ireland.

ANALYTICAL WORK.

THE LABORATORY.—The report by Dr. James Bell, F.R.S., the Principal of the Laboratory, shows that a total of 39,224 samples have been analysed during the year, which is 11,580 more than in the previous year. The increase is due to the Act of Parliament, whereby, in connection with a reduction of the duty on tobacco, a limit of 35 per cent. was placed upon the water which might be present in manufactured tobacco. With manufacturers doing a low-priced trade, and with whom the addition of water had previously only been limited by the absorptive power of the tobacco used, the change has been somewhat unwelcome, and it became necessary to take legal proceedings before some of them would believe that the law would be enforced. Every reasonable precaution is taken against injustice being done to manufacturers in any case where there is evidence that the excess of water is due to accidental or exceptional causes.

In a number of instances tobacco has been obtained from dealers containing an illegal quantity of water, when no such tobacco could be found in the possession of the manufacturer who was alleged to have supplied it; and there can be no doubt that efforts to evade the law by a few manufacturers have been made in this way. In these cases the dealer has been cautioned against having such tobacco in his possession, and in any instance where cautions had proved ineffectual, proceedings have been taken, but, as the dealer was not the primary offender, a compromise fine has been accepted.

From a revenue point of view, the Act is working satisfactorily, for the samples found beyond the limit are gradually becoming fewer, and the consumption of tobacco is steadily growing.

THE SALE OF FOOD AND DRUGS ACT.—Dr. Bell says:—Fifty samples have been referred to us by the magistrates under this Act. They comprised milk, cream, butter, whisky, gin,

beer, coffee, pepper, mustard, and water. In thirty-eight of the cases we agreed with the conclusions of the public analysts; but the results obtained in the other twelve cases were insufficient, in our opinion, to sustain the charges alleged.

Thirty-three of the samples, or nearly three-fourths of the whole, consisted of milk, and the charge in twenty-six of the cases was for addition of water, and in the other seven for abstraction of cream. In the former we agreed that eighteen of the samples had been diluted with various quantities of water, and in the latter we confirmed in six cases the abstraction of cream.

Each of five samples of butter contained an admixture of foreign fat varying in quantity from 15 to 50 per cent.

Of two samples of whisky and one of gin, we could only confirm the certificate of the analyst in one of the cases that an illegal amount of dilution had taken place; and in a sample of beer we could not agree that more salt was present than might have been derived from legitimate brewing materials.

In one sample of coffee, four of pepper, and one of mustard we confirmed the results of the public analyst.

In the case of the sample of water we advised that, owing to its doubtful purity, its use for domestic purposes should be discontinued.

GOVERNMENT ANALYSES.

A large amount of work has been done for the Admiralty, the Board of Trade, the India Office, and the Customs Board. Out of 630 samples of lime and lemon juice tested for the Board of Trade only 35 were rejected, representing 3,780 gallons against 76,536 gallons passed. There have also been analysed for this department 4 disinfectants, none of which, however, possessed any superiority over those already on the Board of Trade's list; 2 boiler deposits in connection with explosions; and 1 saline mixture alleged to possess the property of neutralising the laxative and other injurious effects of sea-water, and so to render such water potable in cases of shipwreck or other similar emergency; but the analysts saw no reason to recommend its adoption.

An interesting investigation, made for the India Office, was in relation to a consignment of tanned hides, which had been sent to India in zinc-lined cases. On arrival, the hides were found seriously damaged, and on analysis it was discovered that the salts used in curing the hides had combined with the zinc lining of the case to form chemical compounds, which had subsequently attacked the leather, and rendered it perfectly useless.

HERB BEERS AND MEDICATED WINES.

Among the beer analyses the chemists have tested 324 samples of herb, ginger, and botanic beer to ascertain whether they contained proof spirit beyond the limit of 2 per cent. allowed by law, and in 101 instances the spirit was found in excess, the proportion ranging from 3 to 10 per cent.

Every year, the Principal remarks, there appears to arise increased difficulty in keeping the sale of liquids containing alcohol in legitimate channels. Many of the so-called medicated wines are quite suitable for use as beverages; and it appears to have been, in many instances, a study to put before the public coca and other wines which, professing to possess medicinal properties, are so prepared that, both as regards flavour and the size and frequency of the dose recommended, they are evidently intended for use as beverages. One liquid called "Pepsi-champagne," and another "Coca-champagne," only possessed their respective prefixes to distinguish them from champagnes of ordinary quality, whilst a liquid called "Riga balsam" proved to be a liqueur of very pleasant flavour.

Many "temperance" beverages have been found anything but free from alcohol, and of this class "elderberry syrup," containing 8.7 per cent. of proof spirit, "non-alcoholic ginger cordial," containing 10.8 per cent., "unfermented sherry," containing 17.0 per cent., and "cowslip wine," containing 28.9 per cent., may be given as types.

Samples of "British port" and "British sherry" sold in the North of England by holders of sweets licences were found to contain so much foreign wine that prosecutions for the sale of foreign wine without licence were successfully sustained against the vendors.

Metropolitan Reports.

MRS. CATHERINE ANN BREWSTER, who lately obtained a verdict of 200*l.* from the chemist Henry, of Lewisham, as damages for the loss of her husband, in consequence of a dispensing error, herself died last week in her fiftieth year.

THE CAMPHOR EXPLOSION.—On Wednesday Mr. Wynne Baxter held an inquiry at the London Hospital into the circumstances attending the death of Henry Carsby, aged 43, camphor refiner, lately employed at Messrs. Howard & Co.'s, chemists, Stratford, who died on Sunday last from injuries received by the explosion which occurred at the works on Wednesday, August 22. After the circumstances of the explosion, which have already been reported, had been stated in evidence, Mr. David Howard, managing director to the firm, said he had worked in the business all his life, and for over eighty years the working of the camphor process had been the same. Never before had any explosion taken place. Camphor burned with a thick soot like lampblack, and witness believed that this soot, which was floating in the air, aught fire and exploded, just as often happened at a lampblack works. Medical evidence showed that Carsby was unable to make any statement while in the hospital, and that death was due to exhaustion consequent on burns. A verdict of "Accidental death" was returned.

A FUTURE CHEMIST.—A young woman, a cook in Kensington, asked the Hammersmith magistrate on Friday last week for a warrant for the apprehension of a person who was said to have defrauded her of 33*l.* She had advertised as follows:—"A respectable young woman would like to correspond with a respectable young man. Church of England. Over 5 feet. A country one preferred." In answer she received a letter, and saw a young man, who represented that he was a chemist's assistant at Woolwich, and expected to pass an examination. She saw him several times, and on his promising marriage she bought a quantity of furniture and met him at Charing Cross, where she gave him 33*l.* to purchase the chemist's shop at Woolwich. She saw him again, and then he stated that his uncle was ill at Northampton, and he left her on the understanding that he was going to Northampton to see his uncle. She had not seen him since. Mr. Paget, after reading a statement drawn up by a detective, said it was a breach of promise, but not a false pretence. If girls would advertise for husbands and meet young men, he could not help them. He saw no reason for the warrant, but she could bring an action for breach of promise of marriage.

FIFTY YEARS' SERVICE.—On Friday evening, August 31, a large party of the employés of Messrs. S. Maw, Son & Thompson met at the Champion Hotel, Aldersgate Street, with the object of making a presentation to Mr. John Bayley, one of the heads of departments, who had then completed his fiftieth year of service with the firm. The chair was taken by Mr. T. C. W. Martin, the town traveller, and the proceedings partook of the character of a smoking concert. We believe this is the second time within recent years that fifty years' service in this house has been similarly recognised, and Mr. Martin, in opening the proceedings, remarked that he had been associated with Mr. Bayley in this business for forty-four years. After some music and singing, Mr. C. T. Maw, on behalf of the staff, presented to Mr. Bayley a handsome timepiece, watch, and chain, and accompanied it with a graceful little speech, expressing the pleasure with which they all took part in this interesting event. Mr. Bayley, in responding, said he had been a lucky man in that he had secured and retained for so long the confidence of the firm. He mentioned that very handsome presents had been made to him that week by the partners in the firm. He feared he could not in a proper manner express his appreciation of the good feeling which had been manifested towards him by them all.

THE importation of saccharin and of alimentary products in which saccharin has been employed has been prohibited in Portugal for hygienic reasons. An exception is made, however, in favour of pharmaceutical preparations containing saccharin.

Provincial Reports.

Items of news, and newspapers containing matters of interest to the trade, sent to the Editor, will much oblige.

BOLTON.

THE late Mr. John Collins, who died here on August 28, was one of the best-known men in Bolton, both in public and private life, his urbane and genial disposition gaining him a host of friends. He was in early life pupil teacher under the late Mr. Rattar at Holy Trinity Schools. He afterwards went to Chester Training College, and then occupied the position of head-master of the Cathedral School, Manchester. On returning to Bolton he was employed as analytical chemist to the Bolton Iron and Steel Company and the Bolton Gasworks, and afterwards commenced on his own account as analytical chemist at Bradford Buildings. He was also analytical chemist to the Farnworth, Kersley, and Little Hulton Local Boards. As an educationist Mr. Collins was a prominent figure in Bolton. He was for some years secretary to the Bolton Church Institute, and may be called one of the pioneers of scientific education, his lectures at the Institute and various schools being largely attended. He was a man of great literary ability, as well as being possessed of brilliant conversational powers. He was 60 years of age, and leaves two sons and a daughter.

BARNSLEY.

THE ALLEGED POISONING CASE AT HOYLAND.—At the Barnsley Police Court on Wednesday Mr. R. D. Maddison laid an information on behalf of Robert Daykin, of Wombwell Road, Platt's Common, against John Matthews, chemist and druggist, Hoyland Nether, for selling poison to Ethel Wray Daykin, a child eleven years of age, at Hoyland Nether, on June 22, the said poison being powders, one of which was administered to Gwendoline Mabel Daykin by her mother on the following morning, and so caused her death. Mr. Williams, the West Riding solicitor of Wakefield, supported Mr. Maddison's application for a summons on behalf of the Treasury. After slight consideration the summons was granted.

It will be remembered that on the date above named Mrs. Daykin, wife of Robert Daykin, of Platt's Common, sent to the shop of Mr. Matthews, at Hoyland, for two worm powders, one of which was administered by her to the child Gwendoline, aged four years, about seven o'clock on June 21. About eight o'clock she was taken ill, and later in the day became convulsed, and, notwithstanding that everything that could be done was done for her by Dr. Ritchie, who attended her, she died about three o'clock on the following morning. As the symptoms all pointed to narcotic poisoning an inquest was held on June 25, at the Royal Oak Inn, before Mr. Wightman, coroner. After hearing the evidence the coroner said he did not see how the jury could come to a conclusion. He thought that an adjournment for fourteen days should be made in order that the stomach and powder should be analysed. The jury, however, wished to consult, and, after some consideration, the coroner said the jury had come to the following verdict:—"That the deceased died on June 22, in the year and parish aforesaid, from narcotic poison, but of what kind, or how administered, there is not sufficient evidence to show."

The contents of the stomach were forwarded to Mr. Allen, analyst, of Sheffield, and subsequently the matter was laid before the Public Prosecutor, who, after considering all the circumstances, has directed proceedings to be taken against Mr. Matthews.

COVENTRY.

ALLEGED FRAUD.—Samuel Bowker (formerly of the firm of Matthew and Bowker, chemists, Manchester) was charged at the Police Court here on August 30 with having obtained from Messrs. Wyleys & Co. by false pretences a quantity of drugs worth 80*l.* on June 19 last. Mr. W. F. Wyley, the

prosecutor, is a magistrate of Coventry, and the prisoner is a brother of a former Mayor of Manchester. It was alleged that for some time past Bowker had been connected with a long firm, and had obtained goods from merchants in various parts of the country on the representation that he was about to commence business at Pateley Bridge, Yorkshire. The drugs obtained from Messrs. Wyleys & Co. were forwarded by order to this address, and were afterwards sent by a confederate to the prisoner at Manchester, where he disposed of them at one-fourth their value. At the present time large quantities of goods are lying at Pateley Bridge and Manchester awaiting the orders of the prisoner, who only a few days ago requested a firm of decorators at Leeds to decorate and furnish a shop for him at Pateley. The prisoner, who said he could explain the whole matter, was remanded. On Thursday last, after some further evidence had been taken, the prisoner was again remanded till Monday.

EASTBOURNE.

TESTIMONIAL TO A CHEMIST.—Mr. Samuel Hall, chemist, of Seaside, Eastbourne, has been presented with a testimonial—a handsomely framed illuminated address—in recognition of his long service and local usefulness as the Eastbourne representative of the Mariners' Aid Society. The testimonial is surmounted by the crown, national flags, and anchor; and underneath are appropriate Biblical texts. The words of the testimonial are as follows:—"Shipwrecked Fishermen's and Mariners' Royal Benevolent Society. Testimonial presented to Mr. S. Hall, honorary representative and agent of this Society at Eastbourne, 1852 to 1887, in recognition of valuable and highly appreciated good service rendered in promoting and carrying out the society's great national work of providing for every want of the shipwrecked fishermen and mariners, relieving the distress of the bereft widow and orphans, and, specially helping all the fishing and seafaring classes providently to help themselves."

EPSOM.

ON Monday at the Petty Sessions nine youths were charged with stealing a quantity of lavender of the value of 10s., growing in a field at King's Lane, Sutton, the property of Mr. John Overton. They pleaded guilty, but said they had never seen lavender growing before, and thought that there could be no harm in taking a root or two. They were fined 2s. 6d. each, and ordered to pay the damage, 10s., and the costs, 10s. 6d., between them, one of the magistrates remarking that thefts of growing lavender must be put a stop to.

LIVERPOOL.

CARBOLIC-ACID POISONING.—Another death occurred from carbolic-acid poisoning on August 31, making the thirteenth case of poisoning, and the fifth death, from this cause reported during the month of August. The latest accident occurred to a woman named Mealey, who got up in the night and drank the acid in mistake for spirits.

ANTIDOTE TO CARBOLIC ACID.—"A surgeon," noting the peculiar tendency of his fellow citizens to take carbolic acid in mistake for other beverages, makes known, through the papers, that the best antidote to the poison is common soap, or, indeed, soap of any kind. But it must be swallowed immediately, and repeated till the worst effects have been relieved. He, however, like the rest of the world outside the Privy Council, trusts that some restriction may be placed upon the sale of so deadly a poison.

MUSSEL-POISONING.—A shipwright named Robert Roberts died at the Northern Hospital here from the effects of eating mussels which he found adhering to the hull of a flat in the graving-docks. Dr. Permewan, house surgeon, having described the case, said the cause of death was paralysis of the respiratory muscles, due to a poison contained in the mussels which he had eaten. In answer to the coroner he stated that it was not known scientifically what part of the mussel was poisonous, but it was conclusively ascertained that the mussel as a whole was at times poisonous. A jurymen said he had been "musselled" himself, but new milk cured him.

THE LIVERPOOL HOUSEHOLD STORES ASSOCIATION (LIMITED), IN LIQUIDATION.—The creditors of the above

association having been conditionally arranged with, reconstruction, subject, of course, to the ultimate approval of the shareholders, is to be proceeded with. At an extraordinary general meeting of the shareholders held last Saturday the scheme of reconstruction was submitted, and consisted substantially in proposing to give to each shareholder in the present company one share in the new company for each share held in the old, and to raise sufficient capital to carry on business by preference stock. The proposal is reported to have been favourably received.

AN IMPORTANT PRESENTMENT.—The deplorable number of fatal accidents which have occurred in Liverpool during the past few weeks from the misuse of carbolic acid has at length seemed to the intelligent British juror worthy of passing notice. At the coroner's inquest on the case of carbolic-acid poisoning reported above, it was deposed that the acid had been purchased at a chemist's by the deceased's daughter, aged 9 years. Several comments, acrimonious but not applicable, were passed with reference to the laxity with which drugs of a dangerous nature are dispensed. The jurors appended to their verdict a rider to the effect that greater restriction should be placed on the sale of poisons to young children. The sentiment expressed is commendable, but annexed to Saturday's verdict, it amounted to a censure by implication on the chemist who supplied the young child with the carbolic acid, which was unjust. Probably if the coroner and jury were informed that about every oil-shop in Liverpool supplies the article without either label or caution they would be surprised.

LYNN.

THE BURGLARIOUS CHEMIST'S APPRENTICE.—Charles Mear Field, a chemist's apprentice, nineteen years of age, whose exploit in entering a room in the Temperance Hotel and stealing a purse from the pocket of a commercial traveller there, and then escaping over the roofs of some houses, has been already recorded by us, came again before the magistrates last week and pleaded guilty. A solicitor who appeared for the prisoner made a strong appeal to the Bench to deal with the case under the First Offenders' Act, and Mr. Smith, the traveller who had been robbed, joined in the appeal. Having reprimanded prisoner and advised him as to his future conduct, the Mayor said the decision of the Bench was that prisoner be bound over in his own recognisance in 100*l.*, and his father in 100*l.*, for twelve months, to come up for judgment when called upon. The costs of the proceedings, including the missing 2*l.*, were ordered to be paid by prisoner.

MANCHESTER.

THE PROPOSED MEDICAL ATTENDANCE ASSOCIATION.—At a meeting of the Manchester and Salford Provident Dispensaries Medical Officers' Association a resolution has been unanimously passed in reference to Mr. Stanley Jones's proposal (in the public press) for a "Manchester and Salford Medical Attendance Association"—"That the success of provident dispensary principles in practice has not been such as to justify the further extension of the system."

OLDHAM.

A CHEMIST AND DRUGGIST "AT HOME."—At the Oldham Police Court, on August 30, Alice Butterworth charged her husband, Charles Butterworth, with assault. Complainant, an old, feeble woman, who appeared in court with a black eye, said defendant struck her in the face, knocking her down and giving her a black eye. She was not drunk, and did not fall on the fender. The defendant was a chemist and druggist "at home," and since the assault she had not lived with him. She wished a protection order. The parties were ordered to go out of court and try to settle the matter, and since they did not come back it is supposed that an amicable arrangement was come to.

TORQUAY.

WHAT ARE EMPTIES?—At the County Court on August 25 Mr. Lewis sued Messrs. Farrant & Co., carriers,

Plymouth, and Mr. Renwick, agent for the Little Western teamship Company, for the sum of 6s., the value of bags sent in transit from Torquay to Bristol. The plaintiff stated that in October, 1887, he delivered to Messrs. Farrant & Co. three boxes, which contained eight bags, to be forwarded to Bristol. They were paid for as empties. Messrs. Farrant agreed to deliver the boxes to the steamer of the Little Western teamship Company. This was done, and a receipt given, in which the boxes were described as empties. On behalf of the defendants it was denied that they were liable for the contents of the boxes, which were described as empties. The defendants, in fact, were led to believe they were empties, whereas they contained certain articles on which carriage should have been charged. The judge said an empty wine bottle was a bottle that did not contain wine, and an empty wine case was a case that contained bottles that did not contain wine. The latter would be sent as an empty, but an empty within an empty could not be sent as an empty, unless the interior empty originally belonged to the exterior empty, or unless the empty within the empty originally belonged to the empty containing the empty. He, therefore, gave a verdict for the defendants.

WARRINGTON.

AN OUTBREAK OF SMALL-POX has occurred in this town, which causes considerable uneasiness, as the sanitary authority, which has to deal with such cases, has no proper hospital accommodation for the treatment and isolation of persons suffering from infectious diseases. After being roused from their slumbers, the sanitary authorities have recommended to the Town Council:—"That the Medical Officer of Health be authorised to purchase, if he thinks necessary, a second Ducker's No. 10 portable house, with the necessary arrangement for connecting it with the fever hospital."

YORK.

THE INSECT POWDER CASE.—We reported last week the inquest held before Mr. J. R. Wood, city coroner, on the body of a woman named Pratt, aged 39, whose death was attributed by a medical witness to Dalmatian insect powder, notwithstanding that arsenic was also found on post-mortem examination. The inquest had been adjourned in order that the powder might be analysed. At the renewed sitting on Monday last the following report from Mr. James Bayne, analytical chemist, was read by the coroner:—"I have made a most careful examination of the above, and am able to certify that it does not contain any arsenic or other mineral poison. It contains an alkaloid, which, from its reaction, I should say is cytisin, an active principle of laburnum, which is well known to be a poison, and I believe it is sold under the name Persian powder, as an insecticide." The Coroner after reviewing the evidence said it was probable the woman took the box of powder, poured a quantity on to the paper, and then, after swallowing the powder, threw the paper into the fire. They had the identical box of powder with which deceased poisoned herself, and the remainder of which had now been analysed and found to contain a well-known poison. He thought they would be quite satisfied that the deceased woman poisoned herself with Dalmatian powder and arsenic. The police, however, after every inquiry, had been unable to find that she purchased any arsenic; but the medical evidence of Mr. Girling showed that there was a quantity of arsenic in the stomach, and it looked as if the arsenic and Dalmatian powder had been mixed together by the deceased woman. He then referred to the labels which were on the packets of Dalmatian powder, which stated that the powder was quite harmless to domestic animals. That had been shown very clearly not to be the case. When he asked Mr. Broom, chemist, for his explanation why such a label had been placed on the powder, his reply was that it was the general opinion of the trade. He thought it was very wrong to have placed such a label on the powder on the strength of a general belief, and he felt sure that it would be a warning to Mr. Broom and all other chemists. After a few minutes' consideration the jury returned a verdict that deceased committed suicide by taking a quantity of Dalmatian powder and arsenic while in an unsound state of mind.

IRELAND.

DUBLIN.

EXPLOSION OF ETHER IN GUINNESS'S BREWERY.—On the afternoon of September 1 a serious explosion took place at Guinness's brewery, resulting in severe injuries to nine men and in great destruction to property. The explosion occurred in the ice engine room, where ice is manufactured by means of ether. Through the bursting of the condenser of an ether cooling-machine, a stream of the inflammable liquid escaped from the engine and came in contact with a gas-jet close by. The ether exploded at once with a loud report, shattering the glass about the building, and causing serious injuries to the men who were driving the engine. The men's faces and hands were scorched in a frightful manner, and the hair of some of them was singed completely off. The skin of their arms also was hanging in loose shreds. A portion of the roof was blown off, and a large quantity of glass broken. The report could be heard from a great distance, and the shock was felt over the whole neighbourhood.

FIRE IN A MATCH FACTORY.—On Friday morning, August 31, a fire broke out in the match factory of Messrs. Patterson & Co. (Limited), Hammond Lane, Dublin. The fire originated in a packing loft where several women are employed. One was filling boxes when some took fire in her hand. The fire caught other matches lying about, and the loft was soon in flames. The fire brigade was soon in attendance, and within half an hour the flames were extinguished. Damage to the amount of 500*l.* was done to the stock, but neither the chemicals nor machinery were injured.

SCOTLAND.

ABERDEEN.

THE PHARMACOPEIA OF THE ROYAL INFIRMARY is at present undergoing revision. We understand Dr. Blaikie Smith has been asked and has consented to undertake the heaviest part of the work. The revision will be quite as much a process of elimination as of addition.

SEQUAH SPEAKS—but spoke in vain when he ("Dr. Hartley") addressed a letter to a committee of the Town Council, offering a rent at the rate of 25*l.* a week for the ground surrounding the Wallace Statue. He wished to rent the ground for a month, and expressed his willingness to pay the 100*l.* in advance. In his communication the applicant says—"I have already received a portion of the reclaimed ground, but my business is so totally different from the shows and amusement usually put there that I am desirous of obtaining a more select situation for the sake of the respectable classes of people who usually form a large portion of my audience. Under similar circumstances, Major Young, of Sydney, New South Wales, allowed me the use of one of the public parks of that city. I am prepared to offer 25*l.* per week for the use of the ground, payable in advance, and will, if desired, pay the amount for the first four weeks—100*l.*—cash down before entering on the same. I also undertake to leave the ground in the same state as I find it, and am willing to take two days' notice to quit the same at any time should the city authorities deem it advisable for me to do so. The use I should put the said ground to would be to drive my wagon on to it twice daily for the purpose of introducing certain remedies to the public. I should generally be accompanied by a good band. Those who are unable to pay are supplied with medicine without fee or charge of any kind, the same medicine being a natural mineral water combined with botanic matter." In spite of this and the printed certificates of character from clergymen and others in Ireland, and his generous offer to pay whatever expense they might incur in satisfying themselves as to his *bona fides*, the committee, after enjoying a hearty laugh, declined to entertain the proposal. Sequah is, therefore, compelled to ply his *philanthropic* vocation in the company of 1*d.* shows, merry-go-rounds, &c.

GLASGOW.

FIRE.—A fire broke out in the shop of Dr. J. T. Cooke, druggist, 268 Broomielaw, on August 28. The damage amounted to 40*l.*

Trade Notes.

MR. EDGAR MASON has taken the business of Mr. J. Kay, West Street, Crewe. The introduction was effected by Mr. Parson C. Baker, of Fulham.

MR. JOHN SELLERS, of 57 Farringdon Road, has been appointed sole London agent for the sale of the Patent Carbolized Peat, a cheap disinfectant.

A NEW and useful supplementary illustrated price list of the Wenham Patent Gas Lamps has just been issued by the Company (Upper Ogle Street, Fitzroy Square, W.).

THE jury of the Ostend Exhibition has awarded the Grand Diplôme d'Honneur (the only one in the section) to Messrs. Burroughs, Wellcome & Co. for digestive ferments and infants' and invalids' food products.

MR. W. E. BUSH, F.C.S., F.S.S., member of the firm of Messrs. W. J. Bush & Co., manufacturing chemists, Artillery Lane, London, has been appointed British juror in the Chemical Section at the Brussels Exhibition.

MESSRS. FOXALL & PEACOCK have commenced business at 21 Mincing Lane as colonial brokers. The firm is composed of Mr. Robert Foxall, formerly a partner with Messrs. Barber Bros., and Mr. J. R. Peacock.

THE business carried on under the style of Barber Bros., 32 Fenchurch Street, E.C., has been dissolved; and Messrs. Edward Barber & Co. will in future carry on the business of East India and colonial brokers at the same address.

MR. C. A. P. GREEN, who has for several years managed the London business of Messrs. Loeflund & Co., of Stuttgart, has now left that business, and will in future devote his whole attention to the affairs of Charles Green & Co., Tower Chambers, Moorgate Street, E.C.

A COMPANY is being formed at Buenos Ayres under the style of "La Buenos Ayres Dairy Company," which will include among its operations the manufacture and exportation of condensed peptonized milk on a large scale. The capital of the company is fixed at \$1,000,000 in \$100 shares, and its managing director is Mr. Carlos J. Christie, Calle Cuyo 1,117, Buenos Ayres.

THE Canary Islands are rapidly developing into a fashionable winter resort, and in order to meet the consequent increasing demand for hotel accommodation the Orotara Hotel, the Casa Marquesa, Zamora, and Buena Vista have been bought up by a company under British management, which also proposes to build a new hotel in addition to the foregoing, to be opened for the 1889 season. It will be remembered that a few weeks ago we mentioned that these islands would offer an eligible opening for a British pharmacist.

WE have received from Messrs. Burroughs, Wellcome & Co. two artistic souvenirs of the Glasgow Exhibition, which they got up on the occasion of the recent visit of the British Medical Association to the city. The more handsome of the souvenirs is a photophane of the north or grand entrance to the exhibition, which shows the grand central dome, and two of the four supporting towers with their octagonal minarets. This striking piece of Oriental architecture makes an excellent picture, and—as Messrs. Burroughs, Wellcome & Co. have produced it—one which would add to the attractiveness of the chemist's counter. The back of the mount bears a complete list of the firm's manufactures, including directions for the manufacture of infusions, tinctures, &c., from valloid fluid extracts. The second souvenir is a photograph by Annan & Sons, who have specially prepared a series of the most interesting "bits" of Glasgow for the firm. Any chemist will get either of these souvenirs by informing the firm to what London house it should be sent as an enclosure. This firm have lately produced a very effective and stylish showcard on a steel-enamelled tablet, 33 inches high by 23 broad, on which are summarised in an effective manner the pharmaceutical preparations which have made their firm famous. These tablets are represented on our front page this week, and are produced in either a chocolate or blue ground with silver or gilt medals.

OUR Birmingham correspondent recently mentioned that a weighing machine had been fixed in a well-known chemist's shop in that town, and that customers or visitors were invited to have a weigh gratis. It was stated that this was found to be a great attraction. The machine, which is illustrated in the margin, is advertised on page 56 (bottom folio) of this issue, and, as it appears to be cheap, we have no doubt will be considered by other members of the trade. One chemist in Birmingham who has adopted this new form of attraction intimates that he has found it very popular with lady customers. The other means available for most persons to get themselves weighed are only the automatic machines to be found at some of the railway stations; and a number of persons who would like to keep a record of their progress in bulk are reluctant to take their gravities in public. The agent for these machines is Mr. F. D. Tippets, Stratford Road, Birmingham.

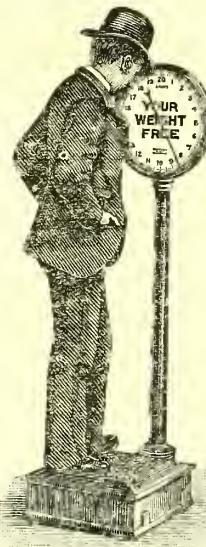
FRENCH PHARMACEUTICAL NEWS.

THE FRENCH VETERINARY COLLEGES have conferred this year 126 diplomas, in consequence of the final examinations just completed. The Alfort (Paris) School sends out 67 graduates; Lyons, 32; and Toulouse, 27, all of whom are reasonably sure of immediate lucrative practice, while most doctors of medicine find it hard to make a living.

MIGRATORY FISHES.—This season sardines have come back to their old haunts, the western coast of France, and brought with them such reinforcements that nets are breaking down under their weight. But some people will always grumble. The fishermen are sending out wails of distress because the sardines sell for almost nothing, and much is wasted. With better management, though, it seems the surplus fish could easily be marketed in large cities. In Paris alone, where fresh sardines are retailing at 1d. a piece, cash customers can be found for almost any amount of the delicacy.

AGAINST BENZOIC ACID IN FOOD.—At its last sitting the Consultative Committee of Hygiene have adopted the conclusions of Dr. Pouchet's report against the use of benzoic acid as a food preservative. The committee very justly argue that, all antiseptics having an obstructive effect on the normal evolution of the digestive process, their addition to aliments must be detrimental to the assimilation organs and general health. Therefore the council are of opinion that the use of benzoic acid should not be tolerated for preserving beer or any alimentary substance.

NO SCHOLARSHIPS FOR LILLE.—It may here be explained that the great manufacturing city has two schools of medicine and pharmacy, the older one being connected with the Catholic Faculty, and the other having been recently transferred by the State from Arras. At a recent meeting of the Department General Council a proposition was made to make a grant for instituting several scholarships in the Lille School of Medicine and Pharmacy. But Councilman Leloup, who represents Arras—it is scarcely necessary to say Arras bitterly resents the loss of her Faculty—opposed the motion, saying before voting any grant it would be well to decide which of the two schools should receive the official favours. For himself he had been informed and did believe that of the two institutions the Catholic Faculty was the better organised and equipped. To end the discussion the council decided to establish no scholarship, either medical or pharmaceutical, in either school. Arras had her revenge.



Foreign and Colonial.

BLUE-BLOODED CRAFT.—Portuguese pharmacy counts among its members a minister of state, a count and peer of the realm, two viscounts, and one baron.

DR. R. WEISSMANN, a well-known German manufacturer of patent medicine much advertised as an infallible remedy for apoplexy, has just died of an apoplectic fit.

IN THE RUSSIAN EMPIRE, according to statistics compiled by the Government Medical Department, there are 2,518 public pharmacies.

MRSSES BONTECON AND MOSHER have bought the pharmacy of C. M. Lyman & Son, of Buffalo, U.S. Both ladies took high honours in their examination at the Buffalo College of Pharmacy.

MADAGASCAR TEA.—Mr. J. Andrianise, of Antananarivo, Madagascar, has successfully prepared for consumption a sample of the first tea grown in the island. The aroma and flavour of the product are said to be so excellent as to encourage every attention being paid to the propagation of the shrub.

THE LARGEST RETAIL PHARMACY IN THE WORLD is, according to the *Pharmaceutical Record*, one owned by George B. Evans, 1107 Chestnut Street, Philadelphia. It is 25 feet in depth, and is undivided—i.e., it is all in one room. In appointments and arrangement of stock, it is a very convenient as well as handsome store.

A MODEL PHARMACY is to be established in the Hospital of San Andrea in Genoa, an institution belonging to the richness of Galliera, who has given a donation of 500,000 lire (5,000£.) towards it. Medicines will be gratuitously dispensed to the poor of Genoa, but the local pharmacists have petitioned the Municipal Council to refuse their sanction to this part of the scheme.

MR. CARLO ERBA writes us that the proposed transfer of his pharmaceutical works from Milan to Switzerland (see THE CHEMIST AND DRUGGIST of Sept. 1, page 278) has not yet been finally resolved upon. The firm are awaiting the ultimate decision of the Italian finance ministry, who have been approached with a view to the revision of the new duties on the materials required in the manufacture of the firm's specialities.

DRUG CULTIVATION IN BRITISH INDIA.—*Coca*.—So far as the North-Western Provinces of British India are concerned, the experiments for acclimatising the coca shrub have been complete failure. In his report for the year 1887-88, the Director of the Mussoorie Gardens writes:—"The plant has not proved so hardy for this climate as supposed. It passed through the winter of 1886 with slight injury, but the severer frosts of the 1887 winter killed nearly all the plants we possessed. Two plants only now survive, and even these still all their lateral branches, and just managed to push through the winter with a little life in the lower part of their main stems. A plant was sent in 1887 to Mr. J. Stansfield, the Arcadia Tea Estate, Dehra Dun, for trial in that climate, but the experiment has not been successful; and I think the experiments with this plant decisively prove that we need not hope for much success in the cultivation of coca in the climate of these provinces."

Dalmatian Insect Powder (Pyrethrum Willemottii).—Inquiries have lately been made by the Government of India regarding the feasibility of growing on a large scale the species of pyrethrums whose dried and powdered petals furnish insect powder, and the Director of the Mussoorie Gardens states, in reference to this, that a packet of seed which was received by way of exchange from a correspondent some years ago resulted in some half-a-dozen plants, of which, in March, 1887, one healthy and well-developed plant remained in full bloom, the others having apparently died or been crowded out by more robust growers. The condition of the plant found shows that it is quite feasible to grow the pyrethrum on the hills; but whether they can be grown on the plains as a cold-season crop has yet to be ascertained by experiment. Orders have been sent to Europe and America for seed of *Pyrethrum cinerariaefolium*, the species the Government of India particularly inquired after, and on its arrival

experiments will be tried both at Saharanpur and Arnigadh with it.

Jalap (Ipomoea purga).—This crop still continues to thrive in Mussoorie. The outturn of tubers amounted to 8 maunds, being 2 maunds above that of the preceding year. The rate of increase cannot be considered as other than slow, but this seems natural to the plant.

The Indian Botanical Gardens are in the habit of supplying the Medical Department at cost price with drugs grown in the gardens, and a considerable saving results therefrom. Thus in the year ending March 1, 1888, the Saharanpur Gardens supplied to the Medical Depots at Calcutta, Bombay, Madras, Allahabad, and Meean Mir, 240 lbs. of hyoscyamus extract, 318 lbs. of dried hyoscyamus leaves, 325 lbs. of taraxacum extract, 350 lbs. of taraxacum root, 32 lbs. of kamala, 100 lbs. of colocynth, and 58 lbs. of jalap, at a total cost of 813 rupees, whereas the estimated cost of the same quantities, at the market price, would have been 3,128 rupees, a saving being thus effected to the Government of 2,315 rupees.

A MEDICAL AND PHARMACEUTICAL EXHIBITION will be held at the Confinement Hospital, 31 Naderhinskaia, in St. Petersburg, in the month of January next, on the occasion of the third annual congress of Russian medical practitioners in that city. The following articles are admissible for show in the pharmaceutical section of the exhibition:—Simple medicinal drugs, pharmacognostical collections, popular remedies, chemical and pharmaceutical preparations, medicines ready for administration, chemical and pharmaceutical apparatus, laboratory fittings, and methods for testing simple drugs, medicinal preparations, &c. Goods to be exhibited will be received between November 15 and December 15, 1888, and no space will be guaranteed to any articles arriving after the latter date. Mr. A. W. Poehl, of St. Petersburg, is the superintendent of the pharmaceutical section, and to him all inquiries should be addressed.

SUMMARY JUSTICE.—About three weeks ago the head of the Montpellier police informed his colleague at Nice that a consignment of 25,000 litres (5,500 gallons) of heavily adulterated wine had just left Montpellier for the Riviera town, and that they should be seized and destroyed immediately upon arrival. The wine was accordingly confiscated at the Nice railway station and poured straightway into the sea, amid demonstrations of approval from the gathered multitude.

DENTAL QUERIES.

Funny Folks' "Innocent," at the Dentists' Conference, "wants to know, you know"?

Whether dentists have had their innings by the time they draw the stumps?

Is it legal to stop teeth and arrest decay without a warrant?

Do the forceps have to be forceps-bly applied in tooth-drawing?

Don't a couple of instruments suffice for dentists—seeing that they only use one of tooth-things?

Why do dentists persist in employing instruments of torture for drawing teeth, when they can be more easily and quite painlessly drawn with a pencil on paper?

Aren't loose teeth the sort most likely to fall out and go astray?

Do people cut artificial teeth when they don't belong to their own set?

Is it because people cut their teeth in early life that their teeth cut them later on?

Aren't grinders the predominant teeth of sawmills?

After the teeth of saws, aren't the teeth of the wind—a gnaw-easter, for instance—the most cutting sort?

Are all the teeth of wise saws wisdom teeth?

Does the first experience of jumping toothache give the sufferer a new start in life?

How is it that some people's mouths are reputed small when they are known to enclose several achers?

Do patients in the dentist's chair realise that the operator spares no pains in hauling out their teeth?

Trade Report.

Notice to Retail Buyers:—It should be remembered that the quotations in this section are invariably the lowest net cash prices actually paid for large quantities in bulk. In many cases allowances have to be added before ordinary prices can be ascertained. Frequently goods must be picked and sorted to suit the demands of the retail trade, causing much labour and the accumulation of rejections, not all of which are suitable, even for manufacturing purposes.

It should also be recollect that for many articles the range of quality very wide.

42 CANNON STREET, E.C., September 6.

THERE can now be no longer any doubt that the drug and chemical trades have been fairly drawn into the vortex of the general improvement. For the present time of the year, the holiday season being hardly at an end, the improvement which has set in is really remarkable, and it must be said that this does not appear in any way due to speculative operations, as in the case of the abortive boom some months ago. At to-day's drug sales, although the total quantity of goods offered was not large, a healthy tone prevailed and several articles advanced in value, the principal one being senna, for which in many cases excessive prices were paid. Calumba, chamomiles, senega, tolu balsam, and honey also show higher values, and fine Tonquin musk has improved no less than 15s. per oz. upon the previous auctions' rates. Clove oil, American peppermint oil, and castor oil are also dearer, while canary seed, Russian anise, gentian, ipecacuanha, and cascara sagrada are very firm. Opium is also somewhat steadier. On the other hand gum benjamin (Siam), dragonsblood, fenugreek seed, Canada and copaiba balsams, and jalap are lower in value. In the chemical markets we have to report a decided improvement in quicksilver and quinine (both, however, to a large extent owing to speculation). Crude camphor and sulphate of copper are also a shade better, and borax and glycerine remain firm. As a set off citric and tartaric acids are lower, and cream of tartar shows more weakness. Heavy chemicals are generally firmer. In dry-salteries, oils, &c., there is a general movement for higher rates, the articles principally affected being shellac, gambier, cutch, turmeric, China galls, cocoanut, lard and rape oil, turpentine, sago, cloves, nutmegs, pimento, and chillies. Cocoa butter alone has been sold at decidedly cheaper rates.

ADVANCE IN HOMeward FREIGHT RATES.—The following table shows the rates homeward for various descriptions of cargo from some foreign ports at the present time compared with the lowest and highest rates current during last year:—

From	Cargo	Lowest in 1887		Highest in 1887		Present
		s. d.	s. d.	s. d.	s. d.	
Saigon ..	.. Rice ..	30 0	..	36 3	..	37 6
Singapore ..	.. General ..	27 6	..	37 6	..	37 6
Calcutta ..	.. Jute ..	27 6	..	35 0	..	45 0
" ..	.. Deadweight ..	25 0	..	32 0	..	37 6
Kurrachee ..	.. General ..	13 9	..	25 0	..	26 3
Azoff ..	.. Grain ..	17 6	..	32 6	..	33 9
Danube ..	.. " per qr.	2 10 $\frac{1}{2}$	..	5 0	..	6 0
Alexandria ..	.. Cottonseed ..	7 0	..	14 6	..	18 6
New Orleans ..	.. Cotton per lb.	0 0 $\frac{1}{4}$	..	0 0 $\frac{2}{4}$	..	0 0 $\frac{3}{4}$
Cronstadt ..	.. Deals per qr.	1 1 $\frac{1}{2}$	..	1 10 $\frac{1}{2}$	..	2 6

Undoubtedly the main reason for the recent improvement is the failure of the wheat harvests in Germany and France and the increased quantity of wheat which will be required this year for consumption in the United Kingdom. There was, however, even before these circumstances were made known, a tendency towards higher quotations in the freight markets.

NEW ZEALAND TARIFF.—The text of the New Zealand Act of Parliament authorising the new tariff has been received. The corrections to be made in the provisional list of drugs, chemicals, &c., published by us on August 25 (page 242) are very slight. To pepper and pimento should be

added "ground, 4d." This applies to all spices, the unground goods being tariffed at 2d. "Salt, except rock," should be "10s. per ton" (not 1l.). "Sauces" are raised from 2s. per doz. pints to 3s. (not 20 per cent. *ad val.* as proposed). Wax, paraffin, mineral, vegetable and Japanese, is advanced to 1 $\frac{1}{2}$ d. per lb. Acetic acid is raised from $\frac{1}{2}$ d. to 1 $\frac{1}{2}$ d. per lb. (not to 3d., as proposed). Cod-liver oil remains free, the proposed 15 per cent. duty not being agreed to.

AT THE DRY SALTERY SALES ON TUESDAY LAST a very animated tone prevailed, although there were only a few catalogues to go through, and the interest practically centred in a few hundred cases of shellac only. But the disposal of these at a decided advance and with a very lively competition almost recalled the time when the article was double or more its present value, and showed that dealers again begin to feel disposed to invest money in this article notwithstanding the many costly lessons which they have had. There are indeed a good many people who say that the present upward movement is nothing but a fluke, and will be of very short duration; but on the whole a good deal of confidence seems to be returning towards the article.

MESSRS. J. H. WINKELMAN & CO., of Baltimore, U.S.A., whose warehouse was destroyed by fire on Monday morning, are among the largest firms in their branch in the city. They carry on an extensive wholesale drug business, and are the manufacturers of a number of pharmaceutical and other preparations, one of their principal specialities being Procter's liquid glue. The principal partner, Mr. Winkelman, was formerly with the wholesale drug firm of Vogeler & Co. The total loss by the fire (of which only a part falls upon Messrs. Winkelman's building) is estimated at \$1,000,000, the whole of which is covered by insurance.

ACID (CARBOLIC) quiet; 40° in crystal is quoted at 1s. 2 $\frac{1}{4}$ d. to 1s. 3d. for bulk, and 1s. 5d. to 1s. 6d. per lb. for bottles.

ACID (CITRIC) dull and tending lower. To-day the market may be quoted at 1s. 6 $\frac{1}{4}$ d., perhaps 1s. 6d. per lb. At the auctions twelve 5 cwt. casks of *Lares's* brand were offered. This parcel appeared to have been sold, after some hesitation, at 1s. 5 $\frac{3}{4}$ d. per lb., but we are assured that such is not the case after all. It is certain that 1s. 5 $\frac{3}{4}$ d. was offered.

ACID (OXALIC) steady at 3d. per lb. *Sal acetos* unchanged.

ACID (TARTARIC) dull. *English* powder is said to have changed hands at the reduced price of 1s. 5 $\frac{1}{4}$ d. *Foreign* acid is held at 1s. 5d. per lb.

ALOES.—The imports of *Cape* aloes have been rather small lately, but the steamer *Arab* arrived this week with 158 packages on board. At to-day's auctions only 12 cases were offered, but these met with no demand and were all bought in good bright hard, very slightly drossy, at 21s. per cwt. Of *Curaçao* aloes we received 338 packages this week via *Savanilla* per steamer *Essequibo*. At the auctions 120 packages (mostly gourds) were offered. There was absolutely nothing of fine, or even good quality. Thirty boxes common overheated red sold at 16s. East Indian (*Socotrine*) in small supply so far as fine qualities are concerned. Common lots are offering, but remain neglected. Of *Zanzibar* also 51 packages were offered to-day but all bought in. Fairly good flavoured red, partly soft, are held at 6d. per cwt.

AMBERGRIS.—Fine qualities are still very scarce, and would bring full prices. At to-day's auctions 9 tins were offered. One of these, good flavoured grey ambergris, sold at 85s. per oz.

AMMONIA SALTS.—*Carbonate* still rules dull, and cannot be quoted above 3 $\frac{1}{4}$ d. per lb. In *Salammoniac* a steady trade is doing at unchanged rates, 3d. for first, 3s. for second quality crystals. *Sulphate* again somewhat easier, but with a better tone at the close, 11l. 10s. for 24 per cent. grey, Beckton 11l. 8s. 9d., Hull 11l. 7s. 6d. per ton.

ANISE.—At present 23s. 6d. to 24s. per cwt. will still buy

ood *Russian* anise, and *Italian* may be had at 40s. to 42s. per cwt. But the market is tending higher and stocks are being reduced, while the new crop is late. With the advance in the *Russian* exchange and the increase of freights most articles from that country are looking up.

ANNATTO.—Some Pará *Roll annatto* which has been repeatedly offered for sale is now obtainable at 11d. per lb. or fair red. *Ceylon Seeds* and *Paste* very neglected, and offering in large quantities. In Liverpool there has been a steady demand for *Guadeloupe annatto*, and 25 casks *TG* brand are reported to have sold at 2d. to 2½d. per lb.

ARSENIC remains very firm at 12d. 15s. per ton for powdered white.

BALSAMS.—The first arrivals of the new crop of *Canada* alsam have been received here, and prices are somewhat easier, say 1s. 6d. to 1s. 7d. per lb. for good bright. In *Yapaibe* holders are a little easier at 2s. 4d. to 2s. 5d. per lb. or good bright Maranham. The position of the article, however, is a strong one. None was offered at to-day's sales. *Peruvian* reported firmer on the Continent, but there is still no absence of animation here. At the auctions 4s. 2d. per lb. was suggested as an acceptable price for good balsams, but his is too high. *Tolu* has been more inquired for at from d. to 3d. advance on recent rates. At auction 60 tins were sold at 1s. 6d. per lb.

BLEACHING POWDER very firm and in good demand, with some prospect of an advance in the future. London quotes 3l. 5s. to 8l. 10s.; *Tyne*, 7l. 10s. per ton.

BORAX steady. English refined is still quoted at 30l. to 31l. per ton, but the supplies in second hands, which are obtainable at fully 30s. less weigh the market down. In Italy here has been more inquiry for *Boracic acid*, and prices rule a little firmer. Crude acid of 18 per cent. maximum impurity is quoted at 24s. per cwt. f.o.b. Leghorn.

BUCHU remains utterly neglected. Thirty bales *sound* eaves were bought in, 2d. would buy the best lot, and 1½d. might be accepted for yellow leaves. A parcel of long leaves was also bought in.

CAFFEINE.—English makers quote 16s. per lb. for the alkaloid and 14s. for the citrate.

CALUMBA in good demand and selling at much better rates than were recently obtainable in public sale. Of 216 bags about one half was disposed of, realising 14s. 6d. to 15s. 6d. for yellowish mixed, dusty and wormy root, 12s. for a dark mixed and dusty lot, and 5s. for common dark and mouldy.

CAMPHOR.—*Crude* Japan is dearer, holders now requiring 32s. 6d. per cwt. on the spot, while abroad the markets are very firm indeed. *Refined* is rather steadier, but 1s. 1d. to 1s. 4d. per lb. is still quoted for English brands.

CANARY SEED.—*Dutch* and *Spanish* seed are advancing in price, but the quotations for these varieties, 45s. to 48s. and 50s. to 54s. respectively, are merely nominal, so far as our market is concerned. *South American* and *Turkish* seed are offering plentifully, the latter at from 39s. to 46s. according to quality, but there is rather more business doing.

CANELLA ALBA.—Three bales good bright, rather broken bark sold at 19s. per cwt.

CANNABIS INDICA.—One bale (from Algoa Bay) green dust, very seedy, was catalogued, but withdrawn.

CANTHARIDES.—Three packages partly very bright, partly mouldy *Russian* flies sold cheaply, with good competition, at 4s. 1d. to 4s. 2d. per lb. without reserve. *Chinese* flies, fairly steady at the recent reduction, 10½d. per lb. being refused for 10 cases mouldy flies, which are held at 1s. per lb. Two other cases sold at 11d. per lb., and siftings at 2½d. per lb.

CARAWAY SEED offers plentifully, but much of the new seed is of indifferent quality. *Dutch* is worth about 23s. for new, and 27s. to 28s. for old seed. Fine new *Russian*, 21s. per cwt.

CASCARA SAGRADA.—Nothing offering at present. Prices are merely nominal.

CASCARILLA.—Twenty-six packages very dusty and somewhat dark and broken quill sold at 28s. per cwt., a very full price.

CASSIA FISTULA.—Twenty bales broken, wormy pods were bought in at 15s. per cwt. nominally.

CASTILE SOAP.—*Conti's* brand is quoted at 38s. to 42s. per cwt. f.o.b., according to packing, 21s. 9d. for green, and 19s. 9d. per cwt. for mottled.

CHAMOMILES.—The market is very firm, and appears to be still advancing; but for the moment fine white flowers are not quoted.

CHIRETTA is one of the articles likely to be affected by the demand for alleged hop substitutes. So far, however, it remains very cheap. At to-day's auctions 3 bales ordinary herb sold at 3½d. per lb.

CINCHONA.—The assortment offered at to-day's auctions was rather small, and very little of it found buyers. Some good bold silvery Bolivian *Calisaya* quill, said to contain over 5 per cent. of quinine sulphate, was bought in at 1s. 2d. per lb., 10d. being solicited, and one case very fine mossy red Madras quill at 3s. per lb. nominally. Up to the present 2,696 packages are announced for sale at Tuesday's auctions, including 1,132 *Ceylon*, 442 *Indian*, 158 *Java*, and 964 *South American* bark. The exports from *Ceylon* between October 1 and August 2 have been as follows:—1887-88, 9,978,480 lbs.; 1886-7, 12,380,891 lbs.; 1885-6, 13,717,867 lbs.; 1884-5, 9,642,291 lbs. The following are the official figures relating to the exports of cinchona bark from *Java* during the last five years:—

		Private	Government	Total
		lbs.	lbs.	lbs.
From July 1, 1887 up to June 30, 1888	..	3,124,924	617,101	3,742,025
" 1886	" 1887	1,569,842	660,433	2,230,275
" 1885	" 1886	1,073,889	457,267	1,531,156
" 1884	" 1885	776,510	419,460	1,195,970
" 1883	" 1884	663,623	440,911	1,104,534

CIVET.—Full prices continue to be asked, though not apparently quite so high as were reported to have been paid privately recently. Two horns were held at 21s. per oz. to-day, while a third of ordinary flavour sold at 16s. per oz.

COCA LEAVES.—There is very little doing on our market, and only one bale broken but good pale *Truxillo* leaves was offered at the auctions, 1s. 3d. per lb. being mentioned as the price.

COLOCYNTH.—Values remain unchanged. At the auctions 46 packages *Turkey* were shown, but all bought in, except 10 packages whole partly shrivelled and mouldy, seedy apple, which sold without reserve at 11d. to 1s. per lb.

CONDURANGO neglected. Forty-seven bales were shown but they were all damaged and extremely woody, and the whole was bought in at nominal prices.

COPPER (SULPHATE) steady from 20l. 5s. per ton upwards.

CORDAMOMS.—Only 50 packages were offered at to-day's auctions, the greater part of which sold at steady rates, but without any eager competition; *Tone Malabar*, small pale round, at 1s. 3d.; *Ceylon Malabar*, small to medium plump, fair to good pale, 1s. 6d. to 1s. 7d.; small pale, 1s. 2d.; specky and mixed, with seed, 1s. 1d.; *Mysore*, long, pale, medium size, 1s. 9d.; plump but yellow, 1s. 7d.; pale, long, medium size, 1s. 4d.; brown and warty to split, 1s. 2d. to 1s.; split and specky, 8d.; *Seed*, dark, 1s. 3d.; pale, 1s. 2d. per lb. The shipments from *Ceylon* are showing some falling off as compared with the preceding season. They are returned as follows for the period between October 1st and August 2nd, 1887-8. 277,152 lbs.; 1886-7, 293,223 lbs.; 1885-6 213,484 lbs.

CREAM OF TARTAR is now in good supply, and may be had at 114s. per cwt. for first white. The market is sluggish.

CUMIN SEED.—More firmly held. For good, if rather dark quality, 40s. per cwt. was asked at to-day's auctions, but there were no sales at that figure.

CUTCH dearer, with sales of *RS tablets* up to 27s. per cwt. At Liverpool the following prices are now quoted:—*Engine*, 32s. 3d. to 32s. 6d.; *Flag BB*, 31s. 6d.; *RS tablets*, 26s. to 27s.; *Pagoda tablets*, 26s. 6d. per cwt.

DRAGON'S-BLOOD.—Three cases finger in reed, fiery colour, but rather broken, were offered to-day, and sold at rather lower rates, viz. 7*l.* 12*s.* 6*d.* to 7*l.* 17*s.* 6*d.* per cwt.

ERGOT OF RYE dull. *Russian* ergot is plentiful, though at to-day's auctions only 15 bags offered, of which 5, slightly mouldy, sold, subject to approval, at 7*d.* per lb.

FENUGREEK SEED.—Although prices in *Egypt* are reported to be higher, *Mogadore* seed of the new crop is now offering plentifully, and the late rates have not been maintained.

GALLS.—The deliveries of *China* galls in London during the present year have been larger than during the corresponding period for several years past. There have been further small sales of good quality at 64*s.*, and the tendency of the market is still towards higher rates. Of *Turkey* galls, 519 bags were offered to-day, but only a few lots sold, slightly damaged, at 52*s.* to 59*s.* For fine blue *Bassorah* galls 62*s.* 6*d.* per cwt. is asked. From *Smyrna* we hear that a parcel of twelve tons prime new black *Jerli* galls have been sold there at the parity of 56*s.* 6*d.* per cwt., while another 10 tons remain in stock. The new green, white, and black *Aleppo* galls had not yet arrived on the market on August 24.

GAMBIER.—*Block* has advanced further, and the sales since our last report include, near at hand, 25*s.*; August-September, 24*s.* 9*d.*; September-October, 24*s.* 3*d.* to 24*s.* 6*d.*; October-November, 23*s.* 9*d.* per cwt., an advance of 9*d.* since last week.

GAMBOGE.—The demand continues good, and the 20 cases offered to-day were mostly sold at steady prices; good orange fracture, slightly blocky and broken, 11*l.* 5*s.*, rising to 11*l.* 10*s.*; dull fracture and cakey, 10*l.* 7*s.* 6*d.*; dark pickings, 10*l.* per cwt.

GENTIAN ROOT.—It is reported that the Italian market is quite cleared out.

GLYCERINE remains very firm, the quotations for double distilled, sp. gr. 1.260, being still from 66*s.* to 70*s.* per cwt.

GOLDEN SEAL ROOT.—The price in America is said to have advanced, and from 1*s.* 4*d.* to 1*s.* 5*d.* per lb. is now quoted here.

GUM ARABIC.—Fine *Turkey* gums remain exceedingly scarce and realise high rates, sorts being bought in to-day at 21*l.* to 30*l.* per cwt. One box good *Egyptian* gum brought 8*s.* 7*s.* 6*d.*, and 3 serons small *Egyptian Amrad* 5*l.* per cwt. Eleven packages white *Mogadore* gum were offered but bought in at high rates. Eighteen packages good sorts, partly of *Senegal* character, said to have been collected in *Kordofan* and to have been stored there for several years, were bought in without mention of price. They were now imported *via* *Massowah*. At the end of last month business was done in *Senegal* gum at *Bordeaux* at the price of 350*f.* to 390*f.* per 100 kilos. The stock in hand at *Bordeaux* was about 1,000 bags. Towards the end of September the African steamers *Louis*, *Turenne*, and *Condé* are expected to arrive with rather heavy supplies. We hear from *Cairo*, under date of August 26, that on that market there is no stock whatever of *Turkey* and *Khurah* gums. In gums from the *Red Sea Coast*, however, business continues steady, about 200 serons having been sold recently at 80*s.* to 110*s.* f.o.b. *Alexandria*. And with some further arrivals the stock now consists of about 300 serons.

GUM ASAFOETIDA.—At the next drug sales 261 cases will be offered.

GUM BENJAMIN.—*Siam* gum sold again at cheaper rates to-day, 15 cases being disposed of "without reserve"; good bright loose almonds, slightly blocky, at 14*l.* 15*s.* to 16*l.*, the first lots being the cheapest, and the average showing a decline of 20*s.* to 30*s.*; good partly blocky grain, rather woody, brought 7*l.* 2*s.* 6*d.* to 7*l.* 7*s.* 6*d.*; dull blocky ditto, 6*l.* 12*s.* 6*d.* to 6*l.* 15*s.* per cwt. For fine orange *Palembang* gum in small boxes, which sold at 80*s.* at the previous auctions, 75*s.* was now refused, while 19 cases *Sumatra* good almondly centred seconds, of strong flavour, but rather badly false packed, went cheaply at 7*l.* 2*s.* 6*d.*, and dull old yellow seconds at 5*l.* 10*s.* per cwt.

GUM ELEMI.—At the auctions 150 mats nearly black block (South American) were offered, but not even 2*s.* 6*d.* per cwt. was offered, and the whole was bought in. For 9 boxes good

white and yellow mixed *Manila* 36*s.* was refused, but another holder accepted 33*s.* 6*d.* per cwt. for a good pale case.

GUM MYRRH.—The arrivals have been rather heavy, and 85 packages were again shown to-day, but there is very little demand. From 90*s.* to 92*s.* 6*d.* per cwt. continues to be asked for fair *Aden* sorts.

GUINEA GRAINS in good demand and selling steadily up to 25*s.* 9*d.* per cwt. for good quality.

HONEY.—The 103 packages *Jamaica* honey offered to-day sold with good competition at some advance, pale liquid brown, 25*s.* to 28*s.* 6*d.*; fair brown, 23*s.* 6*d.*; rather dark and partly candied, 19*s.* 6*d.* to 21*s.* per cwt. In *Liverpool* also there has been a much better demand lately with large sales of *Chilian* honey, at 29*s.* to 30*s.* for good white, and 19*s.* to 25*s.* for lower grades. For *Californian* honey, from 26*s.* to 40*s.* has been paid, according to quality.

INSECT FLOWERS.—There is no alteration in the quotations since our last report, but we hear that the stock at *Trieste* is accumulating so much that lower rates are expected, although the bulk of the supply is in strong hands.

IODINE.—Unaltered at 9*d.* per oz. for *erude*, and 13*s.* 6*d.* per lb. for *resublimed*, while *iodide of potassium* is still quoted at 11*s.* per lb.

IPECACUANHA.—No further arrivals have come to hand since the 115 packages reported last week, but we hear it said that another 50 packages are expected *via* *Hamburg* (?). To-day 45 packages were offered, and as the broker showed a firm determination to keep up the price he succeeded in selling 31 serons at exactly the last sale rates. Fine root was not offered, fairly good partly thin annulated root, sound and damaged, sold at 6*s.* 8*d.* to 6*s.* 9*d.* one lot at 6*s.* 10*d.* per lb.

JALAP has become slow of sale. At to-day's auctions 74 bales rather small *Vera Cruz* were shown and bought in, 4*l.* 2*d.* being refused for slightly damaged and mouldy.

JUNIPER BERRIES are firmly held at the rate of 8*s.* per cwt. f.o.b. *Leghorn*.

LEAD (ACETATE) firm, foreign white at 27*s.*; English at 30*s.* per cwt. *Brown* to *grey*, 21*s.* to 24*s.* per cwt.

LIME JUICE in fairly good supply but rather neglected. For fairly good *West Indian*, with some sediment, 1*s.* 3*d.* is asked; dark and dull ditto sold at 1*s.* per gallon.

MERCIURIALS have all advanced in sympathy with the rise in quicksilver, and the quotations now are:—*Colomel*, 3*s.* 3*d.*; *Corrosive sublimate*, 2*s.* 7*d.*; *Red precipitate*, 3*s.* 6*d.*; *White ditto*, 3*s.* 5*d.*; *Blue pill*, 2*s.* 1*d.*; *Mercurial ointment*, 2*s.* 1*d.*; *Vermilion* (English), 2*s.* 8*d.* to 2*s.* 9*d.* per lb.

MORPHIA.—The makers still quote 4*s.* per oz., but there are a good many second-hand parcels offering at lower figures. At to-day's auctions 500 oz. T. & H. Smith's brand, hydrochlorate powder, in 50-oz. bottles, sold at 3*s.* 3*d.* per oz.

MUSK.—No arrivals have been signalled by the last *Shanghai* steamers, and it is said that none is forthcoming from the interior at the *Chinese* ports. At the auctions to-day only a small supply was offered, and our stock is said to be exceedingly small. For four caddies *Tonquin* first pile, small to bold pods, well trimmed, thin blue skin and under-skin, 100*s.* was at once named as the price, and after some hesitation this was actually paid for one caddy, showing a further advance of 5*s.* over the price paid privately last week. Three other caddies good quality, rather small and broken, sold at 92*s.* to 97*s.* *Cabardine* bold trimmed pods, thin skin, were bought in at 50*s.* per oz.; for *Assam* pods, rather skinny, 25*s.* was refused, while fair *Nepaul* pods realised 35*s.* 6*d.* per oz.

NUX VOMICA remains fairly steady, and for arrival, spring shipment *Cochin* is said to have sold at the full price of 12*s.* 6*d.* per cwt. recently. At auction 39 packages small dark mixed and earthy sold at 8*s.* per cwt.

OIL (CASTOR) firmer, and held for slightly dearer rates although we do not hear of much actual business at the improved quotations. At the auctions 4*l.* was asked for fine *Italian* oil, while first *Calcutta* was bought in at 4*l.* per lb., and rather yellow mixed *Coconada* sold at 2*l.* 6*d.* per lb. *Calcutta* oil is becoming rather scarce at *Liverpool*, and up to 2*l.* 6*d.* has been paid there for fair seconds.

OIL (COD-LIVER).—A steady retail trade is being done, and best non-freezing *Norwegian* oil is held up to 75s. per barrel. The present quotations would appear to be very favourable.

OILS (ESSENTIAL).—The shipments of *Cinnamon* bark and *leaf* oils from Ceylon have assumed very large proportions indeed lately, and are now given as follows:—October 1, 1887, 9,248 oz. At the auctions only 3 cases of ordinary quality were offered, and for these 9 $\frac{1}{2}$ d. per oz was refused. The following are the shipments of *Citronella* oil from Ceylon in the periods between October 1 and August 2:—1887-88, 83,177 oz.; 1886-87, 7,749,626 oz.; 1885-86, 5,165,430 oz. On our market the article remains in an extremely neglected state at $\frac{3}{4}$ d. to $\frac{7}{8}$ d. per oz. for native brands on the spot. In *Chamomile* there is some of the new Mitcham oil being offered at 45s. to 50s. per lb. *Clove* oil has advanced in sympathy with the spice, and is now quoted at 4s. to 4s. 3d. per lb., according to brand. In *French* and *Italian* oils no changes are reported. Of Mitcham *Lavender*, so little of it has up to the present been distilled that it is impossible yet to say for certain how the yield will turn out. A large quantity of herb, however, will be distilled at the end of this week, and it will be known by next week how this is yielding. *Otto* of *rose* remains unaltered, and we still quote 19s. 6d. per oz. American *peppermint* has advanced this week, and yesterday HGH oil sold at 12s. 3d., while to-day 12s. 6d. is asked, and some holders even stand out for 13s. At the auctions 10 cases Hale & Parshall's oil were shown, and for these 11s. 3d. is asked, while 5 cases "American Mitcham" oil, in bulk, were reported to have been sold at 16s. per lb. There is very little fresh to report this week with regard to Mitcham *peppermint* oil; the price of the new oil now that some quantity of it is coming on to the market has been reduced to from 28s. to 29s. per lb. by some holders.

OIL (OLIVE) firm but unchanged, at 34*l.* 5*s.* to 34*l.* 10*s.* for *Mogadore*, 34*l.* 10*s.* for *Sicilian*, and 37*l.* nominally for *Spanish*. In Naples prieses have also advanced, and with a good export demand for Russia and Great Britain the stocks are being steadily reduced. With respect to the growing crop, good rains have fallen at Gioja and Rossano, but at the more important districts of Gallipoli, Taranto, and Brindisi there have been only light showers at intervals, accompanied by southerly winds, which are considered very prejudicial. All that can be said at present is that crop estimates at Gioja are for 1*s.* 8*d.* to 1*s.* 6*d.* of a crop, whereas in the province of Lecce, although there is yet no visible change on former estimates, between the prolonged drought and the late showers and sirocco, the probabilities of reductions in September-October have been greatly increased. Good rains are much wanted in the province of Lecce, and fine cool weather at the other districts.

OILS (VARIOUS).—The following are present prices: *Cocoanut oil*, on the spot, is decidedly dearer, and 24*l.* is reported to have been paid for Ceylon pipes, while *Cochin* is held at 4*l.* 10*s.* to 26*l.* *Mauritius* nominal at 24*l.* 10*s.* *Cotton oil* quiet at 19*l.* for crude, and 20*l.* 15*s.* to 21*l.* for refined. *Castor oil* dearer, English being now held at 49*l.*, and American at 48*l.* *Linseed* steady at 18*l.* 17*s.* 6*d.* to 19*l.* 2*s.* 6*d.* according to packing. *Palm oil*, fine *Lagos*, 20*l.* 10*s.* to 21*l.* *Petroleum* quiet, American, 7*1*/₂*d.* to 7*5*/₈*d.*; Russian, 6*13*/₁₆*d.* to 7*d.* on the spot. *Rape oil* dearer at 26*l.* for crude, and 27*l.* 5*s.* to 27*l.* 10*s.* for refined. *Turpentine* dearer at 29*l.* on American spot.

OPIUM.—In London there is little doing, but Smyrna telegrams just received speak of higher prices there, while in China also the market is advancing. The latest mail reports from Smyrna (dated August 24) are as follows: Although there is no real confidence in the market, and the principal operators are holding aloof, speculators continue to buy on a small scale at the high quotations recently quoted. The Constantinople market is in the same position.

ORRIS ROOT.—There is now scarcely any old root left in stock in Italy, and the new crop has not arrived on the market yet. Prices are quoted as follows in Leghorn:—
Lorentine selected, 47s. 6d.; dark mixed and small, 42s.; Ferone root, fine to ordinary, 23s to 20s. 6d. per cwt.

PUMICE STONE.—We hear from Italy that the supplies still held outside the recently established combination are

becoming more and more reduced, and that it is supposed that the syndicate will soon be able to dictate terms. Meanwhile from 10*l.* 15*s.* to 17*l.* per ton is asked for good to superfine picked pumice, while common qualities may be had at 5*l.* 5*s.* to 8*l.* 10*s.* f.o.b. per ton.

QUICKSILVER.—The principal importers have further advanced their quotation, and now ask 8*l.* 10*s.* per bottle, but second-hand holders sell at 8*l.* 4*s.* The output of quicksilver in the United States during the year 1887 was 33,825 bottles.

QUININE.—A much better feeling has set in since last week, and a large business has been transacted at gradually hardening prices. The English makers have made no alterations in their official quotations, but we hear that some of Whiffen's quinine sold in bulk to-day at 1s. 5d. on the spot, and the makers ask a higher price. The German manufacturers have sold, it is said, up to 1s. 5d. per oz., and now quote at 1s. 5d. to 1s. 5½d., the Auerbach factory not naming a price at all. At the end of last week it was reported that one of the German manufacturers (Auerbach) had made a contract with the Russian Government for 100,000 oz. at 1s. 3d. per oz., which is said to be the lowest price ever accepted for so large a quantity of first-hand quinine.

RHUBARB.—At to-day's auctions 115 packages of fairly good average quality were offered. A pretty good proportion sold at steady rates, one of the brokers stating that if he could not obtain a minimum price, which he named (and which was subsequently conceded to him), the whole of the rhubarb in his catalogue would be sent to New York. *Shensi*, fine druggists' root, even red fracture, brought 3s. 4d.; smaller and darker in fracture, 1s. 9d.; good yellow-coated flat, somewhat woody, fair, but grey and rather dark fracture, 1s. 3d.; smaller, but brighter, fracture, 1s.; wormy, dull grey, and dark fracture, 6d.; *High-dried*, good bold pinky fracture, 1s. 2d.; smaller ditto, 1s. 1d. per lb.

SAFFRON remains very firm at the prices quoted last week.

SARSAPARILLA, dull. *Grey Jamaica* sold at 1s. 8d. to 1s. 9d. for sound, and 1s. 8d. for wormy. *Lima Jamaica*, badly damaged, is held at 1s. 2d. per lb.

SENEGA still has an advancing tendency. At auction 4 bales rather thin sold at 2s. per lb., while 2s. 1d. is asked for fair but chumpy. For good bright root 2s. 2d. per lb. is required. Recent advices from New York describe the position of the article in the following terms:—"Early in the season the leading dealers in the West issued circulars to the collectors, urging them to dig or gather small quantities of this root, or the price would have to go below the low figure paid them last year, at the same time offering extremely low prices for any root they had. The effect of this appears to have been more serious than was intended, for very little came forward. The province of Manitoba, which in former years sent large quantities to the market, had shipped none up to the middle of August, while Dakota and Minnesota sent trifling quantities only. The New York market was kept down by cheap offerings, but when the Western holders found that buyers in Europe were anxious to secure supplies, they raised their quotations, and now decline to offer firm, or to quote definitely for quantity. The New York market is almost bare of supplies, and the dealers mentioned say they also are very short of stock, for little or none is coming in from the collectors. Of course the idea is to keep prices down till all the crop is in, and in another month, when the digging is practically over, it would not be surprising to see a boom in the article."

SENNA.—The new *Tinncrelly* crop, which is said to be plentiful but of medium quality only (as, in fact, the samples shown sufficiently prove to be the case), is still arriving. Since our last report the *Shannon* has brought 189 bales, and the *Aston Hall* 190 bales. At the drug sales to-day 403 packages, including about 100 *Alexandrian*, were offered, and mostly sold at very high prices, the average advance being fully 20 per cent. on the last auction rates, but some of the best lots brought very much more than that. A good proportion of the lots offered was second hand, and there were no fine leaves at all. Medium to bold greenish slightly specky sold at $5\frac{1}{4}d.$ to $5\frac{1}{2}d.$; fair even yellowish, sound, $4\frac{1}{2}d.$; small to medium green and yellow mixed and specky, $3d.$ to $3\frac{3}{4}d.$; small, rather badly damaged and very mixed in colour.

$2\frac{1}{4}$ d. to $2\frac{3}{4}$ d.; ordinary, $1\frac{1}{2}$ d. to 2d.; and half rotten and black, 1d. per lb. For fair even greenish *Alexandrian* leaf, 1s. 3d. per lb. was refused, and nothing of this variety was sold.

HELLAC.—Last week closed with a very firm market, and sales of *Second orange* (TN) lac at fully the rates quoted in our last report; while for *Fine orange* ASSL 62s. was paid. At the auction 640 cases were offered, of which the greater part sold at an advance of 2s. per cwt. on *Orange lac*; 1s. to 1s. 6d. on *Button*; and fully 6d. on *Garnet*. The following prices were realised: Unworked, fair to good fair *Second orange*, 48s. to 49s. 6d.; worked reddish, 46s. to 47s.; unworked blocky *Garnet AC*, 33s. to 33s. 6d.; *Button lac*, good bright first, 62s.; fine thirds, 51s.; good fourths, 41s. 6d. to 42s. per cwt. After the auctions a good business has been done up to 50s. for good second orange spot; and 39s. for AC *Garnet*.

TAMARINDS.—*West Indian* sold rather dearer to-day, from 27s. 6d. to 28s. being paid for fine bold *Barbadoes*. We have received 255 packages per *Belair* this week from various West Indian islands.

TEA.—China remains quiet. Public sales are light, but two or three vessels having arrived, a large amount of tea is offering privately. The China market at present is somewhat of an enigma. The export to date from China is much below last season's, and that again was much below that of the previous season, and a considerable shipping demand may exist between now and the end of the year. Yet these facts, which would have sent the market wild a few years ago, quite fail to stir up enthusiasm in face of the enormous quantities of Indian and Ceylon tea to arrive. One large house has, however, been buying largely and steadily for some weeks, and it would not be a great surprise were a speculative rise in medium Congous—especially Monings—to be effected before long. Assams remain as reported last week. Ceylons are very firm still for the lower grades, but these teas selling from 8d. to 9d. are so very dear and so poor in liquor that they can well be dispensed with by all but those who advertise pure Ceylon teas at low prices.

TURMERIC has sharply advanced this week. *Bengal* has sold at 10s. 6d. and *Madras* at 8s. 6d. per cwt., the market being now bare of the latter variety.

WAX (BEES').—*Jamaica* continues to be in good demand at steady rates, sales being made to-day at 6d. to 6d. 2s. 6d. for fine yellow, 5d. 15s. for good orange, 5d. 12s. 6d. for red, 5d. 5s. to 5d. 10s. for dark mixed to good slightly drossy, White bleached *Calcutta*, after having sold privately at 7d. 15s., is now held at 8d. Fine pale yellow and grey *Australian* is held at 6d. 5s. per cwt.

CHEMICALS IN THE NORTH OF ENGLAND.

THE improvement in our chemical market mentioned last week continues, and the general tone is decidedly better. Prices in most cases are very firm, and in some instances higher. Buyers are coming into the market more freely, and are now contracting to a considerable extent for over next year. The heavy chemicals are all on a better footing, as makers are endeavouring to solve a solution for the long decline in values, and a reduction in output seems the only possible one. This has answered admirably in *Bleaching Powder*, and will probably now be applied to *Caustic Soda* and other chemicals, and, in fact, negotiations are going on at the present moment on this basis.

ACIDS.—*Tartaric* still continues dull and depressed, the absence of orders caused by the cold and wet weather having brought about a large accumulation of stocks, and the closing value is 1s. 5d. per lb. *Citric* also is in a similar position, and business has been quite of a retail character at 1s. 6d. to 1s. 6d. *Oxalic* is steady at 3d. *Boracic* continues to harden, the available supplies now—between this and the end of the year—having been materially reduced. The present quotations are, spot, 26s. to 26s. 6d., and for shipment to the end of the year, 25s. to 25s. 6d. per cwt.

ALUM has been much more active, and orders are coming in freely. The market is very firm at 4l. 15s. to 4l. 17s. 6d., according to packages. *Sulphate of Alumina* meets with an improved inquiry at 5l. to 5l. 10s., and *Aluminoferric* continues to find a ready sale at 3l. to 3l. 2s. 6d. per ton, according to packages.

AMMONIA SALTS.—The late improvement which has taken place in the demand for *Salammoniac* has been fully maintained, and prices close very firmly at 34s. for first and 32s. for second quality. *Carbonate* is held at 3d., and *Sulphate* at the close of the market has improved, 11l. 7s. 6d. to 11l. 10s. being now required for Liverpool and Hull.

BLEACHING POWDER.—This article continues to improve, and is likely to have a further early advance. The market closes very firmly at 7l. 7s. 6d. for *Soft* on rails, and 7l. 15s. for *Hard*, f.o.b. 7l. on rails continues to be freely paid, but there are now few sellers at this price.

BORAX.—The market is firmer at 30s., and there has been some large buying of second-hand lots, which has helped to stiffen the position of holders. *German* and *Italian* makes can, however, still be bought at 28s. to 28s. 6d. per cwt., and these affect to some extent the sale of *English* refined. The inquiry for *Californian* continues, and will probably do so until the market is either entirely exhausted, or San Francisco offers to sell to New York on lower terms.

POTASH SALTS.—There is no improvement in *Prussiate*, and the value is to a great extent nominal at 6d. per lb. for yellow. *Chlorate* still continues in demand, and makers look for higher prices as the year advances; there are still sellers at 5d., but 5d. is now asked by some holders.

SODA CRYSTALS have met with more attention at 2l. 10s., but *Bicarbonate* continues very flat at 4l. 10s. to 4l. 12s. 6d.

SODA SALTS.—The position of *Caustic Soda* is gradually improving, as makers are from time to time reducing outputs, or holding for higher prices, and we are likely to have an early advance. The closing quotations are:—*Cream*, 5l. 12s. 6d.; 60 per cent. white, 5l. 11s. 3d. to 5l. 12s. 6d.; and 70 per cent. white, 6l. 11s. 3d. to 6l. 12s. 6d. There has been considerable inquiry for next year, and sales are reported of 70 per cent. at 6l. 15s. on rails.

SURGEONS have now succeeded in transplanting the cornea of the rabbit to the human eye, and have thereby radically cured opacity of the cornea. The operation was first unsuccessfully tried by Deffenbach in 1824, and Professor von Dippel has now demonstrated its practicability.

SOME time ago reports were common regarding a man in the United States who exhibited himself, for a consideration, in the act of eating glass. Naturally funny people predicted that he would take a *pane* in the stomach. It may please such to learn that the glass-eater has now developed a full-fledged inflammation of the stomach. He has told the doctors that the stuff he ate was not glass, but a composition of gelatine and soluble silicate, which exactly counterfeited glass, and was supposed to be harmless.

DRUG STORES IN GERMANY.—The drug stores have a curious way here of shutting up just about the time you want them, says a correspondent of the *Philadelphia Ledger* writing from Dresden. As soon as it begins to grow dark, down go the shutters; and if you need anything, you go to a little bell-handle outside of one of the iron shutters, and ring it. Then you hear some one at a crank inside; the massive frame rolls up, and a head looks out of the window. Finally the man or boy inside opens part of the window, and you talk through a pane of glass and make known your wants. Instead of getting angry at being aroused, the man begs your pardon for keeping you outside, and says, "I thank you for your order." If you have not the exact change, and the man inside is in the same predicament, he will beg you most politely, and thank you, to allow him to change it. Having done so, he will thank you for calling (evidently taking the visit as a social one), bow, close his little peep-hole, bow again, and then smile sweetly as he grinds down his iron shutter, and his smiling face is lost to view.



Memoranda for Correspondents.

Send your proper name and address: we do not publish them unless you wish.

Write on one side of the paper only; write early; and devote a separate sheet of paper to each query if you ask more than one, or if you are writing about other matters at the same time.

Send us newspapers, please mark what you wish us to read.

Send us anything of pharmaceutical interest: we shall do our best to reply.

For writing for formulæ consult the last volume, if you have it.

Letters, queries, &c., not noticed in this issue will, if possible, be attended to next week.

LEGAL QUERIES.

58/120. *Aly.*—Methylated spirit may be used for the preparation of soap, compound camphor, aconite, or belladonna liniments of the British Pharmacopœia. Having got these liniments, you may mix with them other ingredients if you desire to do so. But if you want to make a special liniment with methylated spirit you must get the permission of the Board of Inland Revenue. The trouble, so far as you are concerned, consists in simply writing a letter, in the first place. The Board may say yes or no, or may make some conditions; may require a bond, perhaps.

1/121. A subscriber puts this question:—"A and B are in partnership. Can B prevent (legally) A transacting business in his own account during said partnership, providing A undertakes not to make use of anything belonging to A and B as partners?" If there is a deed of partnership between A and B it may contain a clause bearing on the problem. If the answer would depend on circumstances. B must be able to show that A is not giving sufficient attention to the partnership business, or in some way is injuring it. But he cannot prevent A employing his spare time in what legitimate manner he may think fit.

49/124. *B. R. F. R.* asks:—"Is a sheep-dipping powder containing arsenic, caustic, and sulphur an infringement of your patent sheep-dips?" It is quite impossible for us to know all the compounds which may have been patented; but as substances you name are ingredients in sheep-dips manufactured by many chemists, we should be pretty sure that your patent for such a mixture would be invalid.

48/124. *J. N. Q.*—We should expect your label would under the preparation liable to medicine-stamp duty, but our only way to be sure about it is to ask the Board of Inland Revenue.

72/123. *Pulv.*—We cannot answer your inquiry about our labels, &c., with authority. You will, however, be able to learn fully the principles on which the Board of Inland Revenue decide such inquiries from Mr. Alpe's book, which will be published very shortly.

56/125. *B. T.*—If, as we understand, you bought a stock which stood on July 30, you are clearly not entitled to goods which arrived a few days later, unless you pay for them. You are only bound to take in those goods if you agreed to assume your predecessor's business liabilities. If no conditions have been made, the firm supplying the goods can only claim payment from the party ordering them, unless you have made use of them.

DISPENSING NOTES.

The opinions of practical readers are invited on subjects discussed under this heading.

Dispensers who have compounded any of the following prescriptions, or similar ones, are requested to communicate their results to the Editor.

Liniment Query (120/21).

For the preparation of the liniment containing

	Parts
Zinci oxide ..	.. 30
Gelatine ..	.. 30
Glycerine ..	.. 50
Ichthyol ..	.. 2
Aq. dest. ..	.. 88

Mitte 8 oz. Apply, when melted, as directed.

Melalucia (123/27) states that the procedure should be as follows:—"Dissolve the gelatine, by the aid of a water-bath, in 60 of the water. Emulsify the ichthyol with the remainder of the water; add the emulsion to the zinc oxide and glycerine in a mortar, mix well, and pour the whole into the gelatine solution. Stir until a thoroughly homogeneous mass is obtained. Pour out into pot while hot."

The Cadmium Liniment.

SIR,—Your correspondent does not tell us that his second trial of the cadmium liniment was not successful.

With respect to the zinc oxide paste there is no difficulty. I have frequently dispensed a similar one, and found the only precaution necessary to ensure success is to make up the quantity of water lost in heating the mixture.

Yours truly,
HEDER.

The Size of Pills.

SIR,—The other day I had a prescription handed in to me as follows:—

Acid. carbolic. ..	..	..	..	..	mlj.
Ext. hyoscyam. ..	..	..	..	..	gr. iij.
Ft. pil. Mitte xxiv. &c.					

I made them up, using pulv. ext. hyos., and making about an 8-grain pill, I divided it into two.

The customer returned them, saying she had had them from the Army and Navy Stores, and they had always been sent out quite small, and, according to the size she pointed out, would be about a 3-grain pill.

Would you kindly inform me if the prescription could be sent out correctly by the Army and Navy Stores?

Thanking you for a recent insertion of mine, which was of great service to me,

Yours sincerely,
LINCS. (121/36.)

[It is not possible to make the pills the size of an ordinary 3-grain pill. With powdered extract and the use of curd soap the smallest pill possible may be produced, and that is uncomfortably large. Perhaps some "store man" will tell us the wrinkle which "Lincs" is desirous of knowing.]

MISCELLANEOUS INQUIRIES.

119/32. *R. Williams.*—The brown spots on your certificate may be removed by carefully treating them with a weak solution of oxalic acid. If this fails try liq. calcis chlorinat.

114/54. *Antiseptic.*—The Preserving Powder which you send is simply boracic acid.

112/40. *T. C.*—The material used for diluting printer's ink is a mixture of mineral lubricating oil and hard paraffin.

113/65. *Exoniensis* sends a sample of a composition which is used by manufacturers of artificial teeth for fixing on the teeth as sent out to dentists. The composition is brownish and tough, the appearance of it being not unlike soft caoutchouc. On examination, however, we find that it consists of hard paraffin (6), resin (1), and a fatty body, probably tallow, (3), with burnt umber as colouring matter. The figures in parentheses indicate parts of the materials which may be taken for experimental trials in making the composition.

116/39. *G. O. M.* sends a sample of *Feculina*, a flour used for making tea-cakes, and which consists of potato farina.

100/22. *Y. Z.*—You will find the "A B C of Modern Photography," by W. K. Burton, C.E. (Piper & Carter, 1s.), a useful little work. The first chapter in this will advise you as to the purchase of a camera. See also the advertisements by various firms in this journal, and get their catalogues.

119/45. *J. A. Legg.*—The book which you refer to is, we presume, Stevenson & Howell's "Aerated Waters, &c.," which refers more especially to the substances used. Barnett & Foster publish a pamphlet dealing with the methods of manufacture.

119/56. *Eidon* has not sent his name, and is referred to the reply to *D. H. D.* in last week's issue.

117/23. *R. Griffiths.* Both specimens are *Datura Stramonium*.

119/55. *John.*—Treatment of Whooping-cough.—We cannot recommend you to give 5 to 10 drop doses of tincture of belladonna to young children; indeed, the remedies which you should give ought to be of the simplest character, as most cases of whooping-cough require only an expectorant. The following is generally useful:—

Potass. bromidi	..	..	..	..	gr. 160
Ext. ipecac acet.	..	..	..	..	gr. xxiv.
Acid. acetic. dil.	..	..	..	..	3ij.
Syrupi scillæ	..	..	..	..	3ij.
Spt. chloroformi	..	..	..	..	3j.
Syrupi pruni virg.	..	..	..	..	3ij.
Aqua ad	..	..	..	..	3xx.

Dissolve the extract in 2 oz. of water and the acetic acid, filter, and mix with the rest of the ingredients, previously formed into a mixture.

Some children are not very susceptible to belladonna, but others are quite the opposite, and for that reason it would be unwise for you to tamper with it in heroic doses.

116/74. *Pyrophos* asks the difference between "citrate of iron with amorphous quinine" and "ferri et quininæ citras B.P." The former is made with amorphous quinine, which is practically a valueless by-product, and poisonous symptoms have sometimes followed its administration; but as a rule "commercial amorphous quinine" (quinoidine) is freed from deleterious contaminants before it is placed on the market, and physicians have reported that it has the same therapeutic action as crystallised quinine in a less degree.

121/40. *Pharmacist.*—The liquid used by printers for thinning their ink is a petroleum ether or purified gazogene.

120/40. *Desdichado.*—Tablets for the Bath may be made by mixing together 4 oz. of bicarbonate of soda and 2½ oz. of tartaric acid, with sufficient lemon or lavender to perfume. Make into tablets by damping with absolute alcohol (or methylated ether) and pressing into moulds.

123/15. *Anxious.*—(1) In the Minor Examination the candidate is not expected to give the proportions of all the ingredients of B.P. preparations, but he must be able to state the proportion of the active ingredient. Thus in the case of liquor strychniae hydrochloratis, the quantity of strychnine per oz. or the amount in 5 minimis or any other quantity which the examiner may name. He must also be able to describe how the preparations are made, but not necessarily to name the quantities of ingredients therein or in the processes of estimation. (2) Begbie's "Medical Information and Advice" (Nelson, 2s. 6d.) gives sound elementary knowledge regarding common complaints.

121/46. *G. W. B.*—An analysis of Allen's Hair Restorer which we had made in 1869 showed that the preparation contained in each bottle 75 6 grains of sulphur, 87 grains of acetate of lead, a trace of carbonate of lead, glycerine, water, and perfume. On the basis of analyses of the most popular restorers, the following formula was then given:—

Acetate of lead	..	..	..	45 grains
Precipitated sulphur	..	..	..	60 "
Glycerine	..	..	..	½ oz.
Rose water	..	..	..	1 oz.
Water, to	..	..	..	10 oz.

Rub the acetate and sulphur together, add the glycerine to form a thin paste, then slowly add the waters.

This restorer should be applied to the hair by means of a small brush, starting at the roots and damping the whole hair. This is to be done daily for a fortnight, then once or twice a week. (2) Comedones. See index of last volume.

121/11. *Observer.*—Precipitated chalk is used by many for the preparation of Aromatic Waters. It is neither worse nor better than carbonate of magnesia, and acts by absorbing part of the oil and combining with any oxidised portion. If anything, it is not quite so soluble as the magnesia.

6/32. *W. J. Meredith.*—(1) The deposit in the tincture of kino bottle is somewhat difficult to remove. Get as much as possible of it out by mechanical force, then place some strong solution of carbonate of potash in the bottle, which will effectually clean it, especially if some sand is put in along with it. Shake well and repeatedly. (2) The best depilatory is that made with orpiment. A good formula is—orpiment, 1 part; starch and quicklime, of each 10 parts. Powder the orpiment thoroughly, mix with the starch, then add the quicklime. A little to be made into a paste with water when required, and this paste is to be spread on the hairy parts and allowed to remain for a few seconds, then removed with a blunt knife.

10/17. *Chemist (Yorks).*—(1) Your cucumber ointment is doubtless too acid, and thus separation is induced. Add a little borax. (2) The addition of a little salicylic acid may prevent the fermentation of the syrup of violets.

120/11. *Hypodermie.*—Sulphate of soda is used for diluting potent substances in the formation of Hypodermic Pellets.

116/33. *F. N. J.*—On inquiring at the London Hospital we learn that the preparation used there is "Salud, a fluid extract of *Jacaranda lancifoliata*." The Salud Company, 3 Savage Gardens, Tower Hill, E.C."

117/9. *G. M. Sleggs.*—You will get all the information you require in the paper by Mr. Conroy on another page.

* * * Owing to the pressure on our space this week, we are compelled to delay publication of letters from correspondents as well as a large number of replies to queries.



SHOP BOTTLES & JARS

WITH VITRIFIED (burnt in) LABELS

(Black Letters on a ground of Pink or White Enamel).

Labels indestructible and of elegant appearance, forming an even surface with the glass or porcelain. The Jars of best porcelain, thoroughly greaseproof. The Bottles hand-made and of superior quality. Both are unsurpassed by anything in the market in every respect. Also a CHEAPER sort of Bottles and Jars, with labels equally indestructible, but very plain, especially suitable for Dispensaries, &c. Intending Buyers are requested to inspect Samples at



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A large number of Shops have been fitted up with these Bottles and Jars, both in England and the Colonies, a list of which can be had on application.

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POISON BOTTLES of Ribbed Blue Glass, with RAISED White Vitrified Letters, and the Word "POISON" in Red at foot.

DRAWER LABELS of Crystal Glass, with Bevelled edges and Vitrified Labels to match the above Bottles and Jars.

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Lithia Salicylate.
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For the Production of Vapours for Medicinal Matters and Chemico-Medicinal Products, for the purposes of Inhalation, for Disinfecting and Antiseptic Uses, &c.

By this method a prompt and ready means is available for obtaining vapours of an extremely attenuated character, of high diffusive powers and greatest activities, either in the dry state or accompanied with water vapour. The materials vaporised or rendered gaseous are not decomposed in the process, but are constant in character, and their energies are wonderfully increased. They are, therefore, conspicuously adapted for loading given air spaces with medicinal matters, so that the patient may receive constant influences therefrom in the act of continuous breathing; or otherwise by direct inspiration by means of a simple arrangement as the volatilised principle issues from the Cone. **The Cones are always ready for use, and require no auxiliary appliances whatever.** The Cones have been submitted to a large number of the leading Members of the Profession, Hospital Authorities, &c., and have received their unanimous approval.

BRITISH MEDICAL JOURNAL:—"The use of vapours for disinfection, deodorisation, and therapeutics has always presented some practical difficulties, and these difficulties have come in to reinforce certain theoretical objections which may be urged against methods of volatilisation hitherto employed. THESE CONES APPEAR TO US, AFTER CAREFUL TRIAL, entirely to do away with the PRACTICAL DIFFICULTIES, and to obviate some, if not all, the THERAPEUTICAL OBJECTIONS. The construction of the cones is so excellent that the products of combustion can neither be seen nor smelt," &c.

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CREASOTE
CARBOLIC AND ACETIC ACID
THYMOL AND LAVENDER
CARBOLIC AND LAVENDER
HYDRARG. SUBCHLOR.
OXYGEN GAS
CARBOLIC ACID
STRAMONIUM

CARBOLIC ET IODUM
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Explanatory Pamphlets, Detailed Lists, &c., will be forwarded on application from the London Offices—

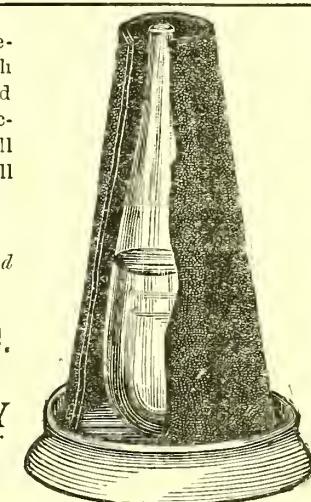
62 HOLBORN VIADUCT, E.C.

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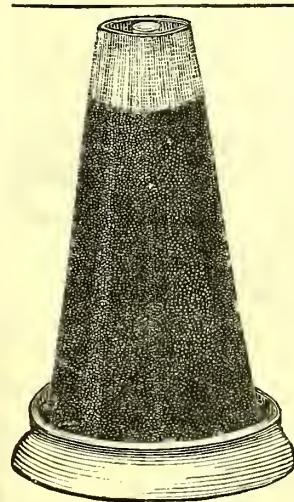
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DOSE HALF DRACHM.—Equivalent to Liq. Bismuthi B.P., 3j; Aether. Chlor., 15 m.; Tinct. Nucis. Vom., 8 m.; Morph. Mur., gr. $\frac{1}{24}$; Acid. Hydrocyanic. Dil., 2 m. (Coloured as Tinct. Card. Co.)

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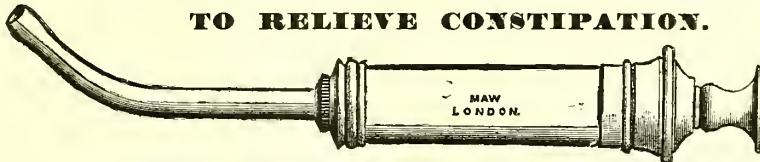
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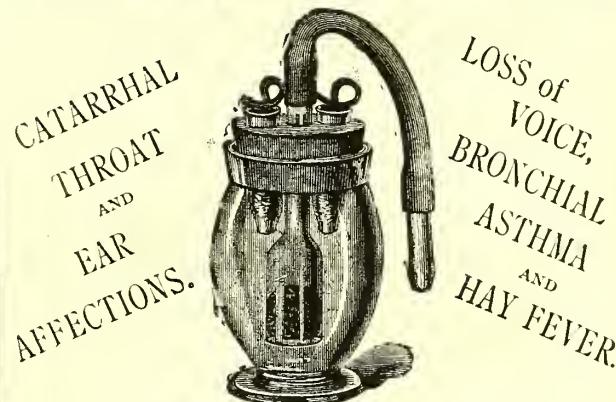
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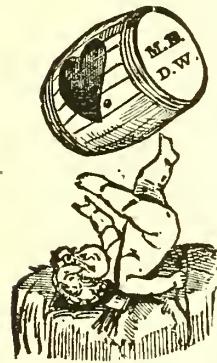
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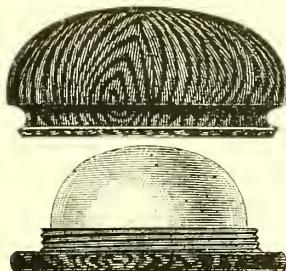


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CASCARA SAGRADA
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The boxes contain 24 Capsules in each, are neatly got up, and of a convenient size and shape for the pocket.

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86

DR. LALOR'S PHOSPHODYNE



For TWENTY-FIVE YEARS has maintained its world-wide reputation as THE ONLY SAFE RELIABLE PHOSPHORIC REMEDY ever discovered for the Permanent Cure of Brain Wreckage, Paralysis, Sleeplessness, Harassing Dreams, Premature Decay of Vital Power, and all Functional and Disease Conditions of the System dependent upon the Deficiency of the Vital Forces. It

Cures Dyspepsia, Nerve and Heart Disease.

Cures Kidney and Liver Complaints.

Cures all Blood Disorders.

Cures Consumption and General Debility.

Checks all Wasting of the Vital Forces, from whatever cause arising.

THE EFFECT of this Standard Phosphoric Remedy in Nervous Debility and its Kindred Evils is Immediate and Permanent, all the Miserable Feelings and Distressing Symptoms disappearing with a rapidity that is REALLY MARVELLOUS.

DR. LALOR'S PHOSPHODYNE

HEALTH, STRENGTH, AND ENERGY.

Is the only Medicine of the kind or name awarded a Certificate of Merit at the Calcutta Exhibition, 1883-4, where all Countries were Exhibitors, and the only Trade Mark—"PHOSPHODYNE"—Registered and Protected under the Trade Marks Act.

THOUSANDS of unimpeachable Testimonials from all parts of the World, and from the highest Medical Authorities, prove conclusively the Verdict Universal that in the World of scientific research no other Phosphoric Preparation has received such exalted praise and distinguished recognition.

Full Printed Directions for the guidance of Patients in the Self-Treatment of the above Diseases are enclosed with each Bottle.

Sold in bottles at 4s. 6d. and 11s. by all Chemists throughout the World.

MANUFACTURED ONLY AT

DR. LALOR'S PHOSPHODYNE LABORATORY, HAMPSTEAD, LONDON, N.W.

ADVANCE WITH THE TIMES!

Every Chemist should put up SYR. HYPOPHOSPH. CO., and push it as the most modern form of "Chemical Food" and "Quinine Tonic."

YEATMAN'S

SYR. HYPOPHOSPH. COMP.

Is the STRONGEST and MOST ELEGANT Syrup yet offered.

ONLY CHEMISTS ARE SUPPLIED.

It contains in each fluid drachm—

Hypophosphite of Lime	1 gr.
" " Soda	2 grs.
" " Potassa	1 gr.
" " Iron (Protoxide).....	1 gr.
" " Manganese.....	1/4 gr.
" " Quinine	1/4 gr.
" " Strychnine.....	1/100 gr.

SLIGHTLY ALKALINE.

The composition may be varied to suit buyers. Diluted with an equal bulk of Syrup it possesses the average strength of the advertised Syrups. As HYPOPHOSPHITE, and NOT Pyrophosphate of Iron, is used in this preparation, no inelegant precipitate occurs.

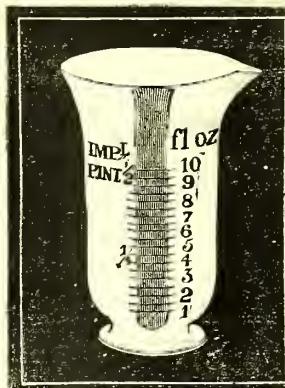
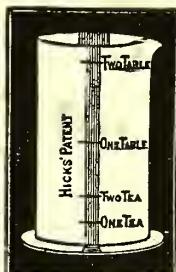
PRICES ON APPLICATION.

F. J. YEATMAN, M.P.S.
141 KENTISH TOWN ROAD, LONDON, N.W.



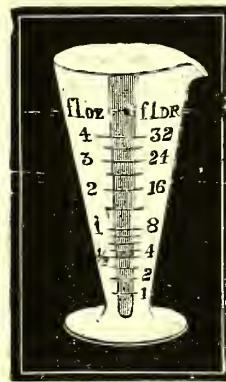
AWARDED
GOLD MEDAL.

ENORMOUS SUCCESS!



I. I. EXHIBITION,
LONDON, 1885.

WONDERFUL SALE
ALL OVER
THE WORLD.



NEW PATENT

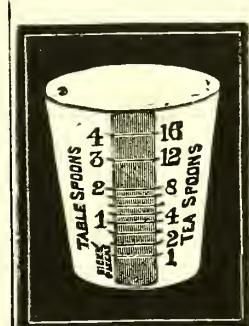
OPAQUE GLASS MEASURES

For Domestic, Chemists', and Photographers' Use.

The advantage of these Measures over those of Plain Glass consists in their being made of Pure White Enamel Tubing, with the divisions and figures fired on in indelible black. They can therefore be read with the greatest ease in any light.

SOLE MANUFACTURER:—

J. J. HICKS, 8, 9, and 10
HATTON GARDEN, LONDON.



To be obtained of all Wholesale Houses and Chemists. Price Lists on application.

TAPP'S "MAGIC" WATER SOFTENER.

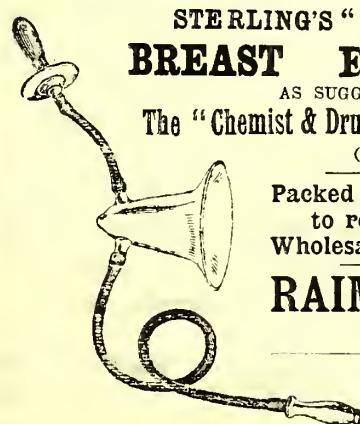
A Very Useful Novelty. Largely Advertised.
Will Pay Chemist to Stock Them.

WHOLESALE OF

**TAPP & CO., COLLEGE
GREEN, BRISTOL.**

STERLING'S "COMBINATION"
BREAST EXHAUSTER,
AS SUGGESTED IN

The "Chemist & Druggist" on June 16th
(See page 781).



Packed in Cardboard Boxes
to retail at 1s. each.
Wholesale, 7s. per doz. net.

RAIMES & CO.
YORK.

RAIMES, CLARK & CO.
EDINBURGH.

GREENSILL'S THE ORIGINAL

When
ordering
from
MONA
AND ONLY
GENUINE.

Wholesale Houses
please specify
GREENSILL'S.
BOUQUET

SOLE MANUFACTURERS—
T. S. GREENSILL & SON
LOCH PARADE,
DOUGLAS, ISLE OF MAN.

SINGLETON'S


250 YEARS'
WORLD-WIDE

BY FAR THE BEST KNOWN REMEDY

GOLDEN EYE REPUTATION

FOR ALL DISORDERS OF THE EYES AND EYELIDS.

OINTMENT

REGD

Recommended and frequently used by DR. WARE, DR. ALEXANDER, MR. CRITCHETT, and other Eminent Oculists

CAUTION.—None offered for Sale can be genuine unless the words **SINGLETON'S GOLDEN EYE OINTMENT** are engraved on the Government Stamp and round the Pot, and the Bill of Directions in which it is enclosed bears the name and address—

STEPHEN GREEN, 210 Lambeth Road, LONDON, S.E.

WYLEYS' GELATINE COATED OVAL PILLS.

The only Gelatine Coated Oval Pills of ENGLISH MANUFACTURE in the Market. Special List on application.

	Gross Botts.		Gross Botts.		Gross Botts.
Bismuth. Pepsin. Co.		Ferri Hypophosph. Comp.		Hydrarg. et Arsenic. Iodid.	
(Wyleys'), B. Bismuth, Nit., 2 gr.; Pepsin Porei, 1 gr.; Ferr. Redact., 1 gr.; Strychnin, $\frac{1}{24}$ gr. 3/6		(Wyleys'). Each pill represents 1 fluid drachm of Syrup of the Hypophosphites...	2/6	(Wyleys'). Each pill equivalent to 5 minims of Donovan's Solution ...	1/8
Caleii Sulphid. $\frac{1}{10}$, $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{5}$, 1 gr. 1/8		Ferruginous (Bland's), 3 and 5 gr	1/8	Manganese Binoxid Pur., 1 gr. 2/6	
Casearia Sagrada (Ext.), 2 gr. 2/-		Ferri Quininæ et Strychninæ Phosph. (Wyleys'), representing Easton's Syrup	3/-	Phosphorus, $\frac{1}{10}$ Ext. Nuc. Vom., $\frac{1}{2}$ gr.	2/-
Ergotin. Comp.				Podophyllin Resin, $\frac{1}{2}$ gr.; Pil. Rhei Co., 4 gr. ...	2/6
B. Ergotin, 1 gr.; Ferri Sulph. Extic., 1 gr.; Ext. Hellebor., 1 gr.; Ol. Sabina $\frac{1}{2}$ m.; Ext. Aloes Soc., 1 gr.... ... 3/-				Potass. Permang., 1 gr., 2 gr. 2/-	

WYLEYS & CO., COVENTRY.

LONDON ADDRESS—1a BURY STREET, ST. MARY AXE, E.C.

WITHOUT A RIVAL!

From the time Medicine was first discovered by the Ancients down to the present none ever made such progress as

BEECHAM'S PILLS.

They stand without a rival, and have by far the largest sale of any Patent Medicine in the World. This is a fact which every business man is bound to admit.

All Foreign Dealers will find BEECHAM'S PILLS the most Saleable Medicine in the Market.

The health-restoring and life-giving properties of these Pills are such as to increase their demand every year.

The words "BEECHAM'S PILLS, SAINT HELENS," are on the Government Stamp affixed to each box.

Prepared only and sold by the Proprietor, THOMAS BEECHAM, ST. HELENS, LANCASHIRE, ENGLAND, in boxes at 1s. 1½d. and 2s. 9d. each, with full instructions for use.



THE HOP BITTERS COMPANY, LIM.

VERSUS

ALBERT N. BECK, HASTINGS.

BY AN ORDER made on the 13th day of July, 1888, by the Honourable Justice Stirling, in the Lord Chancellor's Court (Chancery Division), High Courts of Justice, the Defendant was perpetually restrained from “Infringing “the Plaintiffs' Trade Mark, and from selling or offering for sale any “HOP BITTERS, TONIC BITTERS, or other compound contained in “bottles having affixed thereto any labels similar to or only colourably “differing from the bottles and labels used by the Plaintiffs, or so contrived “or prepared as to represent or lead to the belief that the compound manu- “factured or sold by the Defendant is of the Plaintiffs' manufacture.”

N.B.—Any infringements on our rights or trading on our reputation by vending compounds as substitutes for HOP BITTERS will be summarily dealt with.

We would advise the Trade not to be induced under any pretext to sell or offer for sale compounds in imitation of our HOP BITTERS, but rather to trade only in the genuine article, which is the most honourable, and, in the long run, most profitable. Printed matter will be sent to any Chemist on application, and all inquiries promptly attended to.

MANUFACTURED ONLY BY

THE HOP BITTERS COMPANY, LIM.

41 FARRINGDON ROAD, LONDON, E.C.



EXTRAORDINARY CHEAP LINE !!!

THE WATCH SMELLING-SALT BOTTLE

PLAIN OR FLUTED.

These Bottles are fitted with BEST SCREW NICKEL CAPS, lined with Washers, and are the most wonderful value ever offered. A trial order will prove this fact.

PRICE, IN BEST WHITE FLINT OR **12/-** PER GROSS,
ASSORTED COLOURS, in not less than 1 gr. lots.
SPECIAL QUOTATIONS for Orders of FIVE GROSS and upwards.

E. A. HEARN & CO., Manufacturers of Glass Bottles
of every description,
381-3 KINGSLAND ROAD, LONDON, E.

The annexed Illustration shows exact size of above-mentioned Bottle.

AN OLD SAW WITH NEW TEETH.
SELL FLY CATCHERS WHILE THE FLIES ARE OUT:

If you would like a bit of roaring trade, tackle

WILSON'S STICKY FLY PAPERS,

As advertised in this journal. Their sale just now is fast and furious! Drop a card and you shall be fixed up sharp, and we can square up at the end of the harvest. You pay only for what you sell.

THESE FLY PAPERS WILL FETCH 'EM! CATCH 'EM!! AND KEEP 'EM!!



CHLORIDE OF LIME!
IN AIRTIGHT WATERPROOF & ODOURLESS PACKAGES
INVENTORS AND MANUFACTURERS NATIONAL CHEMICAL CO., LONDON

THE N. C. COS. PACKAGES HAVE STOOD THE TEST FOR MANY YEARS, AND CAN
ALWAYS BE RELIED UPON TO GIVE SATISFACTION.

KEPT IN STOCK BY ALL WHOLESALE DRUGGISTS & C.
SEE THEIR PRICE LISTS



BEAWARE
OF OTHER SO
CALLED AIRTIGHT
PACKAGES.

FLATNESS OF TASTE

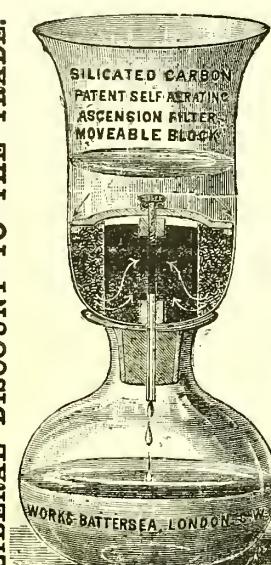
SO COMMON IN FILTERED WATER,

OBVIATED

BY USING

SILICATED CARBON FILTERS AERATED

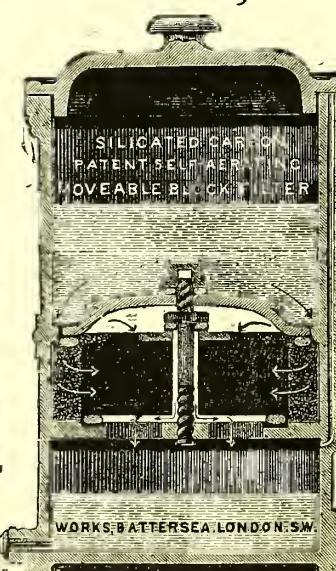
LIBERAL DISCOUNT TO THE TRADE.



Glass Table Filters.

By means of which the water is Aerated and Filtered simultaneously, rendering it, even after boiling, Pure, Bright, and Palatable.

The Silicated Carbon Block can be Instantly Removed, leaving the whole of the Filter Open for Inspection and Cleansing.



WORKS, BATTERSEA, LONDON, S.W.

Domestic Filters.

FOR PRICES AND FULL PARTICULARS, WRITE TO THE
SILICATED CARBON FILTER CO., BATTERSEA, LONDON, S.W.

LIBERAL DISCOUNT TO THE TRADE.



BREEFFIT'S (L.D.) AIRE & CALDER BOTTLE CO.

SOLE MAKERS

"THE INTERNATIONAL" FEEDING BOTTLES.

SPECIALLY INTRODUCED FOR CHEMIST & DRUGGISTS' TRADE.

Increased Sales Feeding Bottles wherever above on sale.

SEND FOR

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Offices and Showrooms:

83 UPPER THAMES ST., LONDON

Bottles, Glassware, &c.

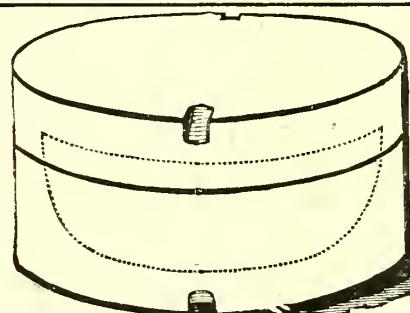
EVERY CLASS AND DESCRIPTION.

WILLIAM TOOGOOD'S SPECIALITIES.

WAREHOUSE AND SHOW ROOM, BURLINGTON BUILDINGS, HEDDON STREET, REGENT STREET, LONDON, W.

TOOGOOD'S
IMPROVED PATENT
EARTHENWARE
COVERED POTS

*Are claimed to be the most perfect
and convenient yet offered to the Trade.*



ORDINARY THICKNESS													8 ounces,	
1 dr.	2 dr.	$\frac{1}{6}$	$\frac{3}{8}$	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{10}$	$\frac{1}{2}$	$\frac{2}{2}$	$\frac{3}{10}$	$\frac{4}{8}$	$\frac{6}{4}$	$\frac{5}{8}$ per doz.
THIN for DISPENSING—														
$\frac{1}{7}$	$\frac{3}{8}$	$\frac{1}{10}$	$\frac{1}{2}$	$\frac{2}{4}$	$\frac{3}{8}$	$\frac{4}{8}$	$\frac{6}{5}$	$\frac{8}{6}$	$\frac{8}{6}$	$\frac{8}{6}$	$\frac{8}{6}$	$\frac{8}{6}$	8 ounces. 6/- per doz.	

TOOGOOD'S
BURNT - IN POTS,
FOR COLD CREAM, TOOTH PASTE, &c.

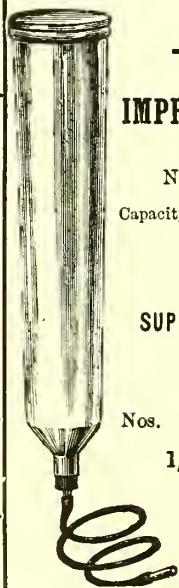
TOOGOOD'S
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TOOGOOD'S
BOXWOOD-TOP CORK BOTTLES

TOOGOOD'S
MEXICAN SQUARES.

TOOGOOD'S
CORN-SOLVENT BOTTLE.

TOOGOOD'S
POISON BOTTLES.



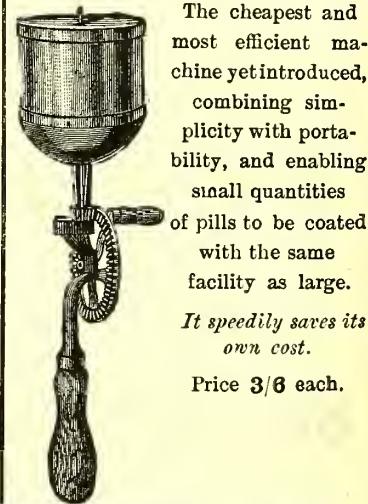
TOOGOOD'S
IMPROVED PERCOLATORS.

	Nos. 1	2	3	4	5	
Capacity	12	25	66	100	160	ozs.
	2/	3/	4/6	6/	7/	each.

SUPPORTS FOR ABOVE IN
STAINED WOOD.

	Nos. 1	2	3	4	5	
	1/9	2/	3/	3/	3/6	each.

NORMAN'S
PATENT PILL COATER



The cheapest and
most efficient ma-
chine yet introduced,
combining sim-
plicity with port-
ability, and enabling
small quantities
of pills to be coated
with the same
facility as large.

*It speedily saves its
own cost.*

Price 3/6 each.

AUSTRALIAN AGENCY AND SAMPLE ROOM:
Mr. A. I. JOSEPH, 250 Pitt Street, Sydney.

William Toogood's Price Current of Glass Bottles, Measures, Earthenware, Druggists' Sundries, &c.,
will be forwarded post free upon application.

Telegraphic Address: "TOOGOOD LONDON."
Telephone No. 3834.

SPECIAL ATTENTION GIVEN TO SHIPPING ORDERS.

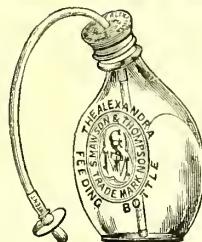
S. MAW, SON & THOMPSON'S FEEDING BOTTLES.



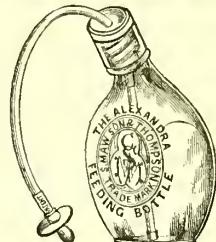
Alexandra Feeding Bottle,
Screw Metal or Earthenware Cap.
11/- per doz.



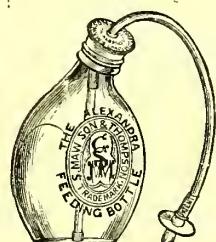
Alexandra Feeding Bottle,
Gilt Porcelain Cap.
20/- per doz.



Alexandra Feeding Bottle,
Earthenware Cap.
11/- per doz.



Alexandra Feeding Bottle,
Screw Glass or Earthenware.
Stopper, 11/- per doz.



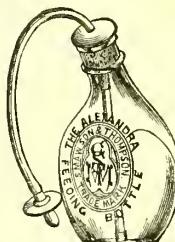
Alexandra Feeding Bottle,
Earthenware Cap.
8/- per doz.



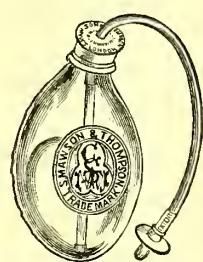
Fountain Feeding Bottle,
Screw Glass Stoppers.
20/- per doz.



Fountain Feeding Bottle,
Screw Glass Stoppers.
12/6 per doz.



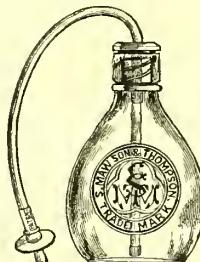
Alexandra Feeding Bottle,
Wood-Top Cork.
3/- and 3/8 per doz.



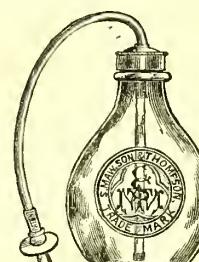
Oval Feeding Bottle,
Earthenware Cap.
8/- per doz.



Export Feeding Bottle,
Earthenware Cap.
7/3 per doz.



Export Feeding Bottle,
Screw Glass Stopper.
7/6 per doz.



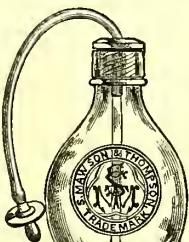
Export Feeding Bottle,
Screw Metal or Earthenware Cap.
9/- per doz.



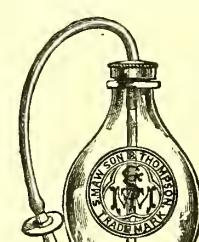
Export Feeding Bottle,
Metal Cap.
4/- per doz.



Export Feeding Bottle,
Wool-Top Cork.
2/9 and 3/6 per doz.



Export Feeding Bottle,
Screw Glass Stopper.
4/- per doz.



Export Feeding Bottle,
Screw Metal Cap.
4/- per doz.

FOR FURTHER PARTICULARS SEE QUARTERLY PRICE CURRENT, PAGES 46 AND 47.

[2] SPECIAL QUOTATIONS TO WHOLESALE BUYERS.

S. MAW, SON & THOMPSON, LONDON.

EMPTY PETROLEUM BARRELS.

RECEIVING WHARVES—EAST, Bow, Atlantic Wharf. SOUTH, Old Kent Road, Western Wharf. RIVER, Millwall, St. Andrew's Wharf.

Empties may also be delivered for our account to Palmer's Wharf, Bethnal Green; Thames Haven Petroleum Wharf, Thames Haven; or any Railway Depôt within 4 miles of the Royal Exchange, London.

N.B.—All Empties delivered at a Railway Depôt as above will be collected at our expense. No charge to the Sender.

PRICE.—If delivered at Atlantic, Western, St. Andrew's, or Palmer's Wharf, 1d. per barrel above the price of the day at any other Wharf in London.

If delivered at a Railway Depôt, the same price as is paid by any other Receivers for delivery at their Wharf.

OUR PRICE to-day is 4s. delivered at a Railway Depôt in London. Special terms offered to Collectors and Costermongers.

Parcels of 15 barrels and over collected at sellers' own premises if within 4 miles of the Royal Exchange, London, and the same price given as would be paid by other Receivers for delivery at their wharf.

NOTICE.—In the case of Empties sent for our account to a Railway Depôt or to Palmer's or Thames Haven Wharf, please advise us when sending, and mark the barrels so that we can recognise them. In the case of sellers wishing us to collect from their own premises, we shall be glad of two days' notice.

DEDUCTIONS FOR DAMAGE.—Broken Chimbley or Stave, 6d.; broken Head, 6d. to 1s. 6d., according to extent of damage.

THE KEROSENE COMPANY, LIMITED, 26 GREAT ST. HELENS, LONDON, E.C. IMPORTERS OF RUSSIAN PETROLEUM.

NEVER FAILING! SELF ADJUSTING!! PATIENCE SAVING!!!

R. H. BARRETT'S NEW PATENT BOTTLE.

THE ONLY REALLY PERFECT CAPPED BOTTLE FOR VASELINE, POMADE, DRY POWDERS, &c.

Prices—Best Box-wood Caps, 2 oz. 20/-, 3 oz. 24/-, 4 oz. 28/- per gross.

Chemists' and Perfumers' Bottles in great variety, Plain or Stoppered. Orders may be sent to the PRINCIPAL WHOLESALE HOUSES.

R. H. BARRETT,
FLINT GLASS BOTTLE WORKS,
THE OVAL, CAMBRIDGE HEATH, LONDON, E.
Telegraphic Address—"FOREFRONT LONDON." [2]

DISPENSING BOTTLES & PHIALS

The following are our greatly Reduced Prices:—

CLEAR BLUE TINTED.

3 and 4 oz.	6/6 per gross.	12 oz.	11/6 per gross
6 and 8 oz.	7/6 "	16 oz.	15.6 "

WHITE MOULDED PHIALS.

LONG OR SQUAT SERIES.

½ oz.	3/0 per gross.	1½ oz.	4/3 per gross
1 oz.	3/6 "	2 oz.	4/0 "

Prompt attention to country orders. Packages 1/ each, allowed for if returned. Sample bottle sent free on application.

I. ISAACS & CO.

GLASS BOTTLE MANUFACTURERS,

25 Francis St., Tottenham Court Road, London, W.C.

Established upwards of 70 years.

Bankers, London and Westminster.

GENERAL ACCIDENT BUSINESS

AGENTS WANTED.

Chemists and Druggists invited

TO APPLY TO

**EMPLOYERS' LIABILITY ASSURANCE
CORPORATION, LIMITED,**

84-5 King William Street, London, E.C.



IMPERIAL HAIR DYE.

(REGISTERED.)

ONE LIQUID.—Harmless, Perfect, Permanent, and free from Smell. Clear, and without Sediment.

Guaranteed to contain no lead, or any other noxious ingredient.

BLACK, BROWN, LIGHT BROWN, OR GOLDEN.

TRADE PRICE LIST:—

No. 1.	1s. 0d. size ..	..	7s. 0d. per doz. Nett
No. 2.	2s. 6d. "	..	17s. 6d. "
No. 3.	3s. 6d. "	..	24s. 6d. "
No. 4.	5s. 0d. "	..	35s. 0d. "
No. 5.	10s. 6d. "	..	78s. 6d. "

J. BRODIE, 41 Museum Street, LONDON, W.C.

H. A. GOODALL & CO.,

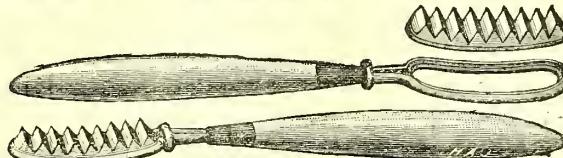
ESTABLISHED
1852.

Bartlett's Buildings, LONDON, E.C.

WHOLESALE ONLY.

NO PRIVATE BUYERS SERVED.

THE "IDEAL" FELT TOOTH BRUSH.



A GREAT NOVELTY IN TOOTH BRUSHES.

Prevents decay, soothes the gums, and polishes the teeth, which no other Brush can excel.

HANDLES.

Assorted Bone and Horn, with Nickel-plated Imperishables, 11/- per dozen.

BOXES OF FELT,

Containing 18 Heads, 7/- per dozen.

An Attractive Show Card given with each Dozen.

THE NEW

MEDICATED PINE WOOL FELT APPLIANCES.

IMPORTANT TO CHEMISTS. WINTER SEASON 1888-9.

Before purchasing your Stock of CHEST AND LUNG PROTECTORS you are requested to see the above invention, bearing the Registered Trade Mark, "EUREKA," without which they are not genuine. The prices will compare favourably with the ordinary Felt Goods in the market, and they are highly recommended by the eminent London Physician, E. J. GIBSON BERKLEY, for the prevention and cure of Bronchitis, &c.

The Illustrations show our new

TERRA-COTTA MODELS,

one of which we supply free of charge with an assorted gross. Prices per dozen:—

Single.....	7/6	9/6	12/6	15/6	18/6
	1	2	3	4	5

Double....	15/6	20/-	25/-	30/-	36/-
------------	------	------	------	------	------

including Circulars, with own name and address on, Show Cards, &c.

Also bona-fide Manufacturers of Ladies' and Gentlemen's Abdominal and Supporting Belts of every conceivable pattern, Chest Expanding Braces, the New "EUREKA" OBSTETRIC BINDER, with Removable and Self-adjusting Plate, Suspensory Bandages, &c., &c.



Size, 19½ inches high

TO BE OBTAINED FROM ALL WHOLESALE HOUSES.



by diameter.

PLEASE NOTE THE ABOVE FACTS.

VINCENT WOOD,

29, 30, 31 Paternoster Square; 11 & 13 Rose St., Newgate St., London.

Telegraphic Address, "ACME LONDON." Registered Trade Mark, "EUREKA."

THIS ADVERTISEMENT APPEARS AGAIN OCTOBER 13.

W. H. B. REFINED } **BEESWAX.**
W. H. B. WHITE }

Bernard Dyer,
B.Sc. (Lond.), F.C.S.,
F.I.C., Analytical
and
Consulting Chemist.

London, E.C., Nov. 25, 1886.
I have analysed a cake of Wax stamped
W.H.B. sent to me by a London House
on behalf of Messrs. W. H. Bowdlear &
Co. of Boston, Mass., U.S.A. It consists
of pure bleached beeswax unmixed with
paraffine, fat, or other of the various
materials with which beeswax and
especially white wax, is commonly adul-
terated.

Bernard Dyer, B.Sc., F.C.S., F.I.C.,
Member of the Society of Public Analysts.

CABLE ADDRESS—"BOWDLEAR BOSTON."

W. H. BOWDLEAR & CO.,
147 Pearl Street, BOSTON, MASS., U.S.A.

Our goods may be obtained in single
case lots of any of the leading
Wholesale Druggists in the Northern
and Midland Counties, and of
LOFTHOUSE & SALTMER, Hull;
COLTHURST & HARDING, Bristol;
GOODALL, BACKHOUSE & Co., Leeds;
GLASGOW APOTHECARIES COMPANY,
Glasgow; OLDFIELD, PATTINSON &
Co., Manchester.

We will deliver our Goods in 5-cwt.
lots ex quay, in any City which is
the Terminus of a Steamship Line
throughout the Kingdom.

PURE
SPIRITS OF WINE.

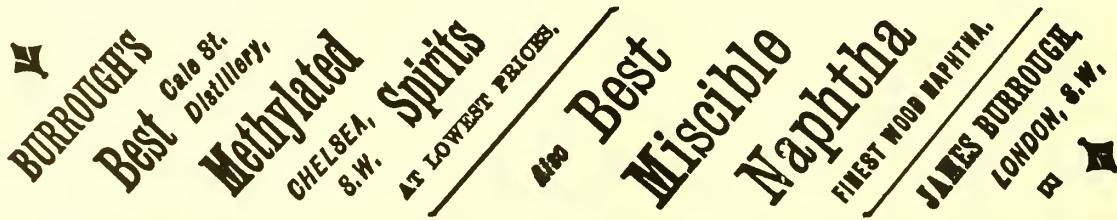
60 o.p., 20/3 per gall.; 56 o.p., 19/9 per gall.

1/- per Gall. Discount for Cash with order.

Further allowance for quantity. **STEAM STILLS ONLY.**

GEORGE PHILLIPS & CO.,

ST. ANDREW'S DISTILLERY, CLERKENWELL RD.
LONDON, E.C.



BOORD & SON,
RECTIFYING DISTILLERS & WINE MERCHANTS,
ALLHALLOWS LANE and BARTHOLOMEW CLOSE, } LONDON, E.C.,
OFFER LOWEST QUOTATIONS, ON APPLICATION, FOR

FINEST RECTIFIED SPIRITS OF WINE

Methylated Spirit and Finish; Finest Orange Wine, Sherries,
and Malagas for Medicated Wines.

GENUINE EMERY, EMERY CLOTH, AND BLACK LEAD.

JOHN OAKY & SONS,

MANUFACTURERS OF

Glass Paper, Emery and Glass Cloth; Emery, Black Lead, Emery Wheels, Pumice,
Putty Powder, Crocus, Urn Powder, Tripoli, Rouge, Plate Powder, Steel Polish,
Furniture Polish, Knife Boards, Brunswick and Berlin Black, &c.

OAKY'S WELLINGTON KNIFE POLISH,

Prepared expressly for Oakey's Patent Rubber Knife Boards, Buff Leather Boards, and all the Patent Knife Cleaning Machines.
Sold in Canisters with perforated Tops to prevent waste, at 1d., 2d., 3d., 6d., 1s., 2s. 6d., and 4s. each.

OAKY'S NON-MERCURIAL SILVERSMITH'S SOAP,
For Cleaning and Polishing Silver, Plate Glass, Marble, &c. Tablets, 6d. each.

OAKY'S "POLYBRILLIANT" (Registered).

A Magic Pomade for Cleaning Brass, Copper, Tin, Pewter, Britannia Metal, &c. Never becomes dry and hard like other Metal Pastes.
Tins 1d., 2d., 3d., and 6d. each.

WELLINGTON BLOCK BLACK LEAD.

In 1d., 2d., and 4d. Blocks, and 1s. Boxes.

WELLINGTON EMERY & BLACK LEAD MILLS, Westminster Bridge Road, London, S.E.

Highest award and Prize Medal, Philadelphia Exhibition, 1876; and Boston, 1888. Gold Medal, Crystal Palace, 1884.

REVOLUTION IN THE FLY PAPER TRADE.

It must have been observed that for some time the public have become disgusted with the old poisonous fly paper, and have taken somewhat readily to a sticky sort of substitute.

The advertiser has perfected and patented a Fly Paper of this nature, which will certainly be the leading thing in the future. It is a well got-up and effective paper, and is as cleanly to handle as a sheet of note-paper.

In the advertiser's own retail establishment, last season, the sale of this was simply enormous, as they were freely used by tradesmen (butchers, bakers, grocers, and confectioners), who would not dare to risk the danger from dead poisoned flies about their stock. Owners of horses and cowkeepers were delighted with them, as they spared the animals the torture from this source.

From the nature of the article it cannot very well be stocked by Wholesale Houses for distribution to the Retail Trade, but the Parcel Post will carry them direct from the maker, and Postal Orders will facilitate remittance.

The price is 4 6 per gross (carriage free), but where a large trade is developed more liberal terms will be given.

Send sample order for small lot, and while the season is on you are bound to do a big thing.

ADDRESS—

S. WILSON, CHEMIST, ST. HELENS, LANCS.

FOUND DEAD

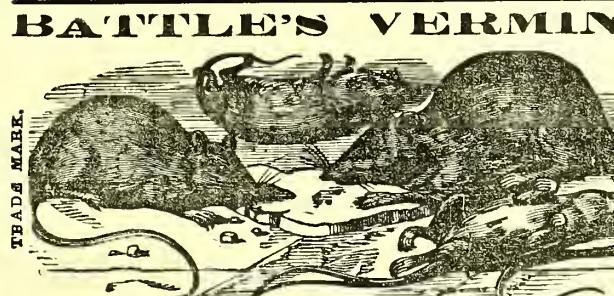
BY SANFORD'S RAT POISON.

"I have found 145 rats killed in my farm buildings by it."—C. Wilson Offord.

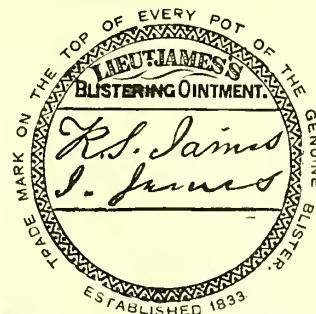
"It is the most certain remedy I have ever tried. Little pellets about the size of a pea are put in the rat holes or in their runs. I destroyed over 200 rats from one dressing with it."—C. Cook, Grange Farm, Ellesmere, Salop. It is, without doubt, the best ever introduced. Price 6d., 1s., 2s., and 3s., of Chemists.

SANFORD'S MICE POISON for Houses, Buildings, Corn Stacks, &c. Cannot be exceeded. Has given entire satisfaction for the past 2 years. In packets 3d., 6d., 1s., and 2s., each, with directions for use, of SANFORD & SON, Sandy, Beds. Liberal terms to Chemists. Wholesale of Barclay & Son, Sanger & Son, Newbery & Sons, Edwards, and others, London (England).

TRADE MARK.



ESTABLISHED 1833.
HORSES.—LIEUT. JAMES'S BLISTER.



CAUTION.

The annexed Label is at the top of every Pot of the **ORIGINAL** and only GENUINE BLISTER.

The Messrs. Barclay & Sons, 95 Farringdon Street, London, and Messrs. Raimes & Co., Edinburgh, are now and have been Agents 55 years.

AGENTS :—Sutton & Co., 10 Bow Chur hvard; W. Edwards & Son, 127 Queen Victoria Street; Newbery & Son, 37 Newgate Street; Evans, Lescher & Evans, Bartholomew Close; Burgoine, Burghes & Co., 16 Coleman Street; Lynch & Co., 171A Alder-gate Street; Southall Brothers and Barclay, Birmingham; R. Heydenden & Sons, 93 & 95 City Road, Finsbury; Sanger & Son, 150 Oxford Street; Millard & Sons, 40 Charterhouse Square; Cory & Soper, Shad Thames; A. A. Campbell, Leadenhall Street, London; Wooley, Sons & Co., 59 Market Street, Manchester; Arothecaries Company, Virginia St., Glasgow; John Thompson, 53 Hanover Street, Liverpool; Boileau & Co., Bridge Street, Dublin; McMaster & Co., 121 & 122 Capel Street, Dublin; Clarke & McMullen, Victoria Street, Belfast; D. Galbraith, Londonderry; M. C. Delaere, Pharma ie Anglia, Brussels.

And by all Chemists, in Pots, 1s. 2s. 5s. 9s. and 16s.

COLONIAL AGENTS :—MELBOURNE and WELLINGTON: Felton, Grimwale & Co.; SYDNEY, BRISBANE, and LAUNCESTON: Elliott Bros. & Co.; DUNEDIN and AUCKLAND: Kempthorne, Proser & Co.; CALCUTTA: Smith, Stanisstreet & Co.

W. H. JAMES, SOLE MANUFACTURER, STANFORD, FARINGDON, BERKS.
Advertised in "Bell's Life" 54 years. Beware of Spurious Imitations.

KILLER. { Mice eat it readily and Die on the spot.

Has an immense sale, and wherever introduced never fails to give satisfaction.—Mice appear attracted to it as by magic, eat readily, tumble over, and die on the spot. Rats usually die in their runs.—Parties troubled with Vermin may be cleared at once, either from Stacks, Houses, or Ships.

TESTIMONIALS. —Thousands might be published.

From Mr. THOMAS COLTON, Agent for Selby.—A friend of mine purchased a Packet of your VERMIN KILLER last night, doubting its efficacy to-day he called in to say that he had found fifteen dead mice, and had only used part of a packet.—From Mr. EDWARD STURDY, Flemington Mills, I duly received by post the Packet of your VERMIN KILLER, and found it as represented in your advertisement. It speedily destroyed all the mice in my granary. I enclose 2s. for two more Packets.—Leeds, November 6th, 1857.—I have tried BATTLE'S VERMIN KILLER, and have found it most effectual in clearing my premises of **LARGE QUANTITIES OF RATS**.—THOMAS S. CROSLAND.—Mr. Sturdy.

Sold in Packets, 3d., 6d., and 1s. each.
SOLE PROPRIETOR:

Mr. J. R. BATTLE, Chemist, Lincoln, England.
No Chemist or Storekeeper should be without a supply.

PINE'S DEVONSHIRE OILS

FOR HORSES, COWS, SHEEP, AND LAMBS.

THESE CATTLE OILS are prepared from the Original and Valuable Recipe of WILLIAM YOUNATT PINE, and are unsurpassed, their great sale being a sufficient guarantee of their EXCELLENCE.

PREPARED AND SOLD WHOLESALE BY

WALTER GREGORY, 31 Fore Street, WELLINGTON, SOMERSET.



GOVERNMENT DISINFECTANT

CARBOLIC POWDER (PINK) in 1 Cwt. 2 Cwt. CASKS 1lb & $\frac{1}{2}$ Packages.

CARBOLIC POWDER (PINK) in TINS 6d & 1/-

CARBOLIC FLUID in 6d 1/8 & 1/6 STOPPED BOTTLES

CARBOLIC SOAP N. 1 & N. 2

CARBOLIC & GLYCERINE SOAP in 1/4 lb. TABS

FREE FROM POISON
AGREEABLE IN SMELL.

THE GOVERNMENT SANITARY CO., LONDON E. 25

TO BE HAD FROM ALL
WHOLESALE DRUGGISTS



AUSTIN & CO.

PATENTES & MANUFACTURERS OF ROUND CARDBOARD AND OTHER SHAPED BOXES
BRITISH AND FOREIGN,

For POSTAL and general purposes; also PATENT BARREL PACKAGES with Metal ends for dry goods.

Inventors of the "NOVEL" METAL PERFUME SPRINKLERS.

Office & Warehouse—8 GREVILLE ST., HATTON GARDEN, LONDON, E.C.

Steam Works, 2 Printer's Buildings, Broad Yard, Turnmill St., London, and Ring Factory, Clonakilty, County Cork.

HORN & SON.
OFFICES FOR BRITISH AND FOREIGN
PATENTS AND TRADE MARKS,
SOMERSET CHAMBERS, 151 STRAND, LONDON
(NEXT TO SOMERSET HOUSE).
Guide to New Patent Law and Registration gratis.

CARBOLIC POWDER
IN BAGS, CASKS, OR CANISTERS.
5%, 10%, 15%, and 30%.
EITHER PINK OR WHITE.
SAMPLES AND PRICES ON APPLICATION. [2]
GRINDLEY & CO., POPLAR, LONDON, E.

LINT.
THE
LIVERPOOL PATENT LINT CO.
MARK STREET MILLS,
NETHERFIELD ROAD NORTH,
LIVERPOOL.
See Advertisement.

EMP. BELLADONNA.
ON SWANSDOWN, 16 IN. WIDE.
17s. per Doz. net cash.

JOHN QUILLIAM & CO., Plaster Works, Cowburn Street, Manchester. [2]

GEORGE HAYNES & CO.
Hampstead Cotton Mills, Cherry Tree Lane, Stockport,
MANUFACTURERS OF
BLEACHED AND ABSORBENT WOOLS,
Grey Wool, Coloured Wools, and Jewellers' Sheets.
WHOLESALE AND EXPORT ONLY.
Telegraphic Address—"HAYNES STOCKPORT."

S. SAINSBURY'S
A Highly-perfumed Scent,
prepared from the finest
ENGLISH LAVENDER,
without any foreign whatever.
176 & 177 STRAND, LONDON.
Wholesale and Shipping terms on application.

RUBBER TYPE
On Metal body, perfectly accurate, for instantly making a RUBBER STAMP for Social Labels, &c., saving expense and delay. Complete Outfits from 7s. Send for Specimens and Price List to the Patentee,
E. M. RICHFORD, Dept. C, 44 Snow Hill, London,
Manufacturer of Rubber Stamps, Presses, the "Nigropad" and
"Effective" Self-Inking Pads, &c., and Stamp-making Outfits.
Chemists in all parts of the world can add largely to their profits by pushing our Goods. Liberal terms.

FRED^K FINK & CO.,
10 & 11 MINCING LANE, LONDON, E.C.
SPECIALITIES: Glycerine—Gum Arabic—Gum
Tragacanth—Pure Beeswax—Honey—Vanilloes.

PRECIPITATED CHALK, WHITEST &
PUREST
CHEAPEST SELLERS IN THE MARKET.
ALSO CHEMICALS, DRUGS AND OILS
APPLY TO
AUG. LEVERMORE & CO.
8 LIME STREET LONDON, E.C.

GLOY FOR LABELLING, &
Cheaper, cleaner, and more adhesive than gum, paste,
dextrine. Never decomposes in any climate.
Price 12s. per cwt., equal in solution to 3d. per ga
Agents wanted. Gold Medals and numerous Testimonials.
Address—GLOY CO., 14 ST. MARY AXE, LONDON,

GIVEN AWAY!
YOUR MONOGRAM or NAME.
Anyone sending 3d. for postage, &c., and mentioning this advertisement, will receive gratis his Two-Letter Monogram in above style, or his name in full, for Marking Linen or Paper. Great variety of Stamps. Specimens free.
VAN HOUTEN & CO., Stereotypers in Indianrubber,
21 COLEMAN STREET, LONDON, E.C.

ORANGE WIN.
(VIN. AUBANT., P.B.)
Specially brewed for Quinine Wine, does not deposit. Is well adapted for Export as it will keep good in any climate. In casks 13, 27, 56, 112, 140 gallons; casks 3s. 9d. per gall., carriage allowed. In wine bottles (not less than 9s. per doz., including bottles. Cases extra and returnable.
Sample six stamps. Special quotations to large buyers.

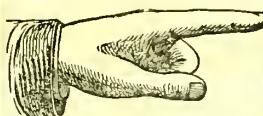
GEO. DURRANT & CO., Hertford.

"HOME, SWEET HOME."
QUIBELL'S
INFALLIBLE DISINFECTANT
AGENTS WANTED WHERE NOT ALREADY APPOINTED
Write for Prices and Terms to
QUIBELL BROS., Manufacturing Newark-on-Trent.

HEALTHITAS
THE NEW DISINFECTANT, in Powder, Fluid, and Soap, &c.
CHLORIDE OF LIME, in Bulk, or in 1, 1/2, and 1 lb. Airtight Pack.
CARBOLIC POWDER, from £2 10s. per Ton.
CARBOLIC ACID, all kinds. CARBOLATED CREOSOT.
✓ **NEW CARBOLIC SANITARY CO., LTD.**
HACKNEY.

ANALYTICAL AND CONSULTING CHEMIST.
GEO. LOGAN RAIT, F.C.S., &
Laboratory—21 MOORGATE ST., LONDON, E.C.
Assistance given to Manufacturers and others requiring Chemical knowledge.
Fifty per cent. discount allowed to the Trade.

HOOPING COUGH! HOOPING COUGH!! HOOPING COUGH
Positively and quickly cured by the New Discovery.
KEMP'S WHOOPALINE
(TRADE MARK.)
Is a certain cure in all cases of Hooping Cough, Bronchial Disorders, and
affections of the Chest and Lungs. Price 1/1 and 2/9 per bottle.
Prepared only by
W. H. KEMP, 220 Holloway Road, LONDON,
Wholesale Agents:—
MESSRS. BURGOYNE, BURBIDGES & CO., 16 Coleman Street, London, E.C.



ARMBRECHT'S
COCA WINE.

AGENTS APPOINTED.
2 DUKE ST., GROSVENOR SQUARE.

CARMEL.

This Castile Soap is manufactured at Mount Carmel, Palestine, from pure Olive Oil pressed on the spot. As an emollient for the skin and complexion it is the most ancient and best soap.

AGENTS WANTED IN EVERY TOWN.

DEPOT FOR GREAT BRITAIN AND COLONIES—

MOUNT CARMEL SOAP CO., 24 Charles Street, Hatton Garden, LONDON, E.C.

KERNICK'S
LIME JUICE CORDIAL
(SWEET OR DRY),
FRUIT SYRUPS ETC.
LIST FREE.
KERNICK & SON, CARDIFF.

LOFODEN

COD LIVER OIL CO.

"NORTH STAR" BRAND.
WRITE FOR SAMPLE.

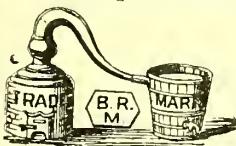
In Casks, Drums, and Win. Qts.
Manager—ARTHUR CLARIDGE, 135 Vine Street, Minories, LONDON, E.C.

Introduced 1855.]

ROBINSON'S CONCENTRATED WATERS.

[Introduced 1855.]

One Ounce of these Waters added to Forty Ounces of Distilled Water forms a clear Medicated Water (without filtering), similar in every respect to those prepared according to the directions of the British Pharmacopœia, and free from all Chemical impurity. They will keep good any length of time in any climate.



Aqua Anethi, Concent., 4/- lb.	Aqua Cinnam. Ver. Concent., 6/- lb.	Aqua Fenicul. Concent., 4/- lb.	Aqua Pimentæ, Concent., 4/- lb.
" Anisi 4/- "	" Cassia 4/- "	" Menth. Pip. 4/- "	" Rose 8/- "
" Camphora 4/- "	" Flor. Aurant. 8/- "	" Ang. 6/- "	" Virid. 4/- "
" Carvi 4/- "	" Flor. Sambuci 8/- "	" Rose Virgin 10/- "	

The above are put up in Bottles of ½ lb. or 1 lb. and upwards, each of which has the Inventor's Protection Label over Cork.

From the *LANCET*, July 15, 1882:—"CONCENTRATED WATERS (Robinson's, Pendleton, Manchester).—Among the samples sent to us we find Aq. Anethi, Anisi, Cinnam. Ver., Rose, and some dozen of others. Diluted with forty parts of water they form the ordinary waters of the Pharmacopœia. They are excellent in quality, and will be very useful, especially in country practice."

Wholesale Agents: HEAROX & CO., London, and most Provincial Wholesale Druggists. PREPARED BY THE INVENTOR.
B. ROBINSON, MANUFACTURING CHEMIST, DISTILLER, AND BREWER OF BRITISH WINES, MANCHESTER.

INTERNATIONAL FISHERIES EXHIBITION, LONDON, 1883.

COD LIVER OIL.

Low Quotations on application. Delivered at London or Liverpool.

The Only GOLD MEDAL

For British Exhibitors was awarded to

T. J. SMITH,

10 & 11 NORTH CHURCH SIDE, HULL.
Importer of Norwegian, Newfoundland, & other varieties.

G. VOGT, WHOLESALE AND EXPORT DRUGGIST, 12 Laurence Pountney Lane, Cannon Street, E.C.

INSECT POWDER

GUARANTEED FROM CLOSED FLOWERS. (9 PRIZE MEDALS.) THE CHEAPEST IN THE TRADE.

Finest Essential Oils; Rose, Orange, and Elder Flower Waters—Triple; and all Drugs, Chemicals, &c.

DETAILED PRICE LIST ON APPLICATION.

DRUGS, CHEMICALS, AND PHARMACEUTICAL PREPARATIONS

BARRON, SQUIRE & CO.

(LATE DREW, BARRON, & CO.),

WHOLESALE & EXPORT DRUGGISTS,
BUSH LANE, LONDON, E.C.,

MANUFACTURERS OF ALL DESCRIPTIONS OF PHARMACEUTICAL PREPARATIONS,

Beg to inform Merchants, Shippers, &c., that all Indents entrusted to them will receive careful attention and prompt execution.

Messrs. B., S. & Co. request the attention of their friends and the Trade, at home and abroad, to their having PURCHASED THE BUSINESS of Messrs. JAMES BASS & SONS, Hatton Garden, and with it the various Formulae from which their Special Preparations have been made, and pledge themselves to supply them in all their integrity.

Specimens of these Preparations have remained in the Museum of Kew Gardens during 23 years without deterioration.

SHIPKOFF & CO.

OTTO OF ROSE

MANUFACTURERS & MERCHANTS,
KIZANLIK, BULGARIA.

VIRGIN OTTO ONLY DEALT IN

REPRESENTED IN ENGLAND BY

GEO. P. BAKER, 19 Ivy Lane, Newgate St., London, E.C.

ORIENTAL



A lovely Bath and Toilet Water
will be obtained by using



MARIE DU BOYER'S DIANE DE POITIERS SPECIALITIES FOR TOILET & COMPLEXION

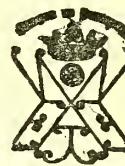


Are giving great and general satisfaction, and, being most
attractive in get up, sell at sight.

TWENTY-FIVE PER CENT. TO THE TRADE.

A liberal supply of Counter Wrappers and Pamphlets on application.

MARIE DU BOYER, 41 New Bond Street, LONDON.



FABRIQUE
DE
MATIÈRES PREMIÈRES DE
PARFUMERIE.

PARFUMERIES DE SEILLANS

(VAR. FRANCE).

Flower Pomades. Perfumed Oils. Flower Extracts.
Essential Oils. Distilled Waters, &c., &c.

OF ALL WHOLESALE DRUGGISTS, OR WHOLESALE ONLY OF

R. C. TREATT, Dunster House, Mincing Lane, London

AROMATIC SALTS, FOR BATH AND TOILET PURPOSES.

The ORIENTAL AROMATIC SALTS, when dissolved, render the water very soft, and impart a most agreeable and refreshing perfume that can be diffused with advantage in a room where the air is close and depressing.

The ORIENTAL AROMATIC SALTS strengthen the tissues, perfume and invigorate the body, preserving it from contagious diseases, and cleanse the pores, thus facilitating the cutaneous transpiration so necessary to life.

The ORIENTAL AROMATIC SALTS are unrivalled for beautifying and preserving the Skin, rendering it soft and velvet-like; and for keeping the complexion perfectly bright and clear.

They are indispensable in the Bath as well as in the Bedroom, and should be used by everybody.

Sold in Bottles at 1/6. Wholesale of the Patentees and Manufacturers—

S. TRAVADO & CO., 27 Jewry St., E.C., LONDON.

To be had also of Messrs. BREIDENBACH & CO., Perfumers to the Queen,
157b NEW BOND STREET, W.

This entirely new and excellent health-giving preparation SOFTENS THE WATER, gives it a most delicious odour, and

BEAUTIFIES THE COMPLEXION

in a most extraordinary way.

Should be in every Bathroom and Bedroom.

To be had of all respectable Chemists
and Perfumers throughout the World.

SOLE MANUFACTURER AND INVENTOR—

H. MACK, ULM a/D.

Wholesale Agents for Great Britain—

OSBORNE, GARRETT & CO., London, W.

FREE SAMPLES

Given Away with every Trial Order.

MARIE DU BOYER'S

DIANE DE POITIERS SPECIALITIES

FOR TOILET & COMPLEXION

Are giving great and general satisfaction, and, being most
attractive in get up, sell at sight.

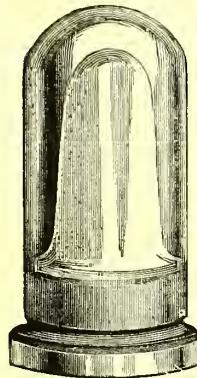
TWENTY-FIVE PER CENT. TO THE TRADE.

A liberal supply of Counter Wrappers and Pamphlets on application.

MARIE DU BOYER, 41 New Bond Street, LONDON.

SHIRLEY'S A1 BRAND MENTHOL.

QUITE NEW.



The Menthol is fixed on a China Stopper, which is covered with a glass shade; always clean.

Buyer's own name printed round the China if order is given for a large quantity.

Doz.
Style 26A. 6d. size.. 3/6
Style 27A. 1s. size.. 6/3

GOOD SELLING PATTERNS.

No.	Description.	Price per doz.
1	6d. Glass Bottles with Metal Screw Cap	3 3
1B	6d. Blue Ditto	3 4
9A 1s. or 1/6	Boxwood, Skittle-shaped	7 6
9C 1/6 or 2s.	Do. Do.	9 6
9S 6d. or 9d.	good value, Do.	4 6
17L 1s.	Draughtsman Shape, Boxwood only, extra large	6 6
17S 6d.	Ditto Boxwood	4 0
19 6d.	Boxwood, Egg Shape, on elegant Card	3 0
21A 1s.	Menthol on Boxwood stopper, covered with glass shade, very attractive, 12 in a box	6 3
23A 6d.	Ditto 12 in a box	3 6
24 6d.	Boxwood, Bottle Shape, very attractive	3 6

A Dummy Cone, 9 inches high, given free with all orders of 20s., or two if 30s. order is placed.

SPECIAL PRICES to LARGE BUYERS.

Chemist's own name printed on back of the boxes without extra charge, provided a gross is ordered. This opportunity of advertising yourself and increasing your trade should not be lost.

ORDER AS A1 BRAND.

SHIRLEY'S 2nd QUALITY, PUT UP FOR THOSE WHO WANT CHEAP GOODS.

	Per Dozen	Per Gross
2d. No. 100.—Polished Willow Box	1/5	13/
3d. " 101.—Willow Acorn	1/10	17/
3½d. " 102.—Boxwood Pedestal	2/4	24/

	Per Dozen	Per Gross
4d. No. 103.—Boxwood Pedestal (large)	2/9	27/
4d. " 104.—	2/9	27/
6d. " 105.—	3/4	34/

These prices are net, and the boxes have not the printed directions on them.

DON'T MAKE A MISTAKE!!!

The following Sell Well and bear a Good Profit:—

EAU DE COLOGNE

In flat watch-shape Bottles, with Nickel Cap.

Each Bottle is neatly labelled, and contains an ounce of best quality Perfume.

A GOOD SELLING LINE.

4s. per dozen, 12 in a Box.

FULLER'S EARTH

Attractively put up in cardboard boxes, with label (3 colours).

Can be had either White Precipitated, as preferred by many, or ordinary Prepared Fuller's earth.

Price, 3s. per dozen.

Special terms for large quantities.

Order as A1 Brand.

TOOTH SOAP,

WHITE ROSE.

Nicely got up in a hinged patent Box (Jahncke's), neatly labelled.

The Soap itself is highly scented and fragrant.

4s. per dozen.

FUMIGATING RIBBON.

Elegantly put up in round blue and gold Boxes.

Indispensable to the Sick Room, as, after being lit a few minutes, a vapour ascends perfuming the whole room.

3s. 6d. per dozen.

A Show Stand given away with an order for 3 dozen, together with two yards of Ribbon to practically show its perfume.

SMELLING SALTS.

The best Bottle of the Season: it has a good base, and stands well; is attractively labelled, and enclosed in a hinged outer. Filled with strongest ammonia, and agreeably perfumed.

Price, 2s. per dozen, 20s. per gross.

Special quotations for 5 or 10 gross lots.

A similar Bottle, only stoppered, 4s. per dozen. 43s. per gross.

A CHARMING LITTLE NOVELTY!

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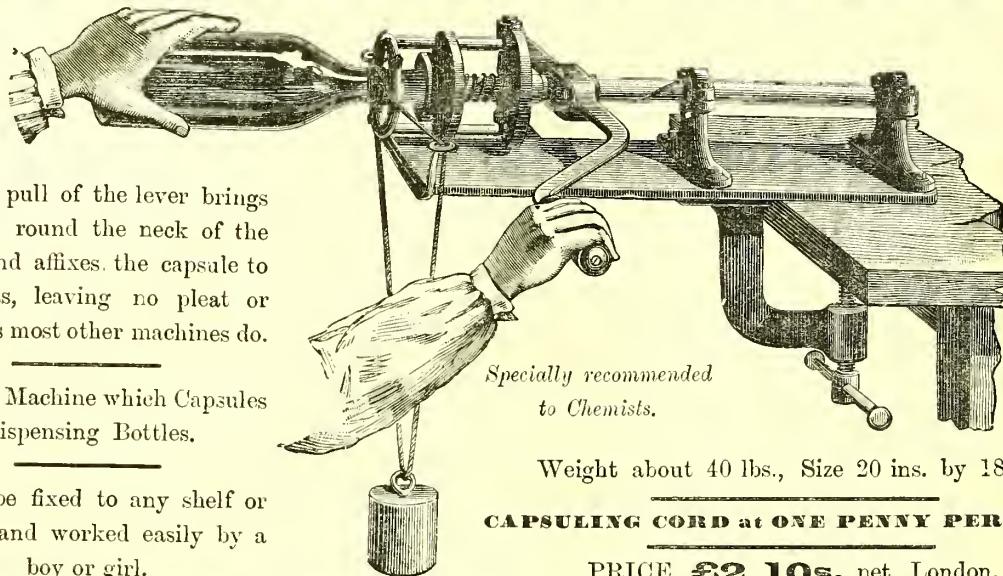
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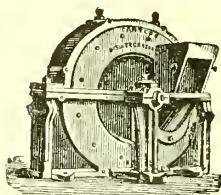
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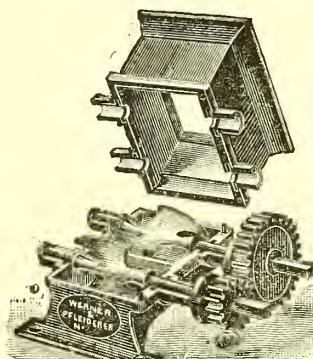
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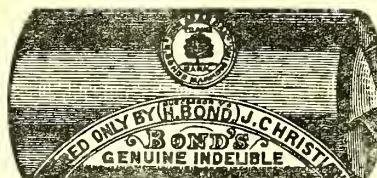
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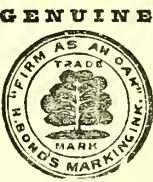
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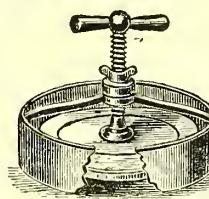
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NET CASH PRICE ON RAIL, £6.

TESTIMONIALS.

The Central Drug Stores, Corporation Street, Birmingham, July 25, 1888.

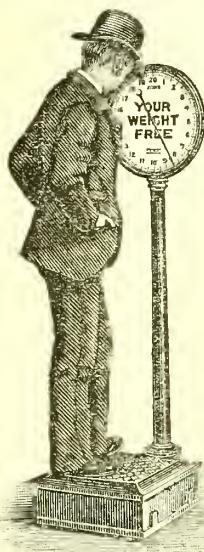
Mr. TIPPETTS—DEAR SIR,—I find your Weighing Machine is freely made use of by my customers, especially the ladies. Patients bringing a physician's prescription for the first time frequently weigh themselves, and afterwards, as better in health, note their difference in weight. The heaviest lady to date has been 18 stone 2 lbs.; gentlemen, 19 stone 5 lbs.

Yours truly, (Signed), MARTIN MAGER.

159 Stratford Road, Birmingham, August 2, 1888.

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Yours faithfully, (Signed), CHAS. THOMPSON.



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SELF-WEIGHING MACHINES are being patronised by several Chemists in this town, with a view of providing a source of amusement to customers while they wait.—*The British and Colonial Druggist*, July 7, 1888.

ANOTHER REVOLUTION IN AUTOMATIC MACHINES.—A Birmingham tradesman throws out a bait to his customers in the shape of a machine on which they can have their weights taken for nothing.—*The Birmingham Daily Mail*, July 21, 1888.

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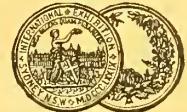
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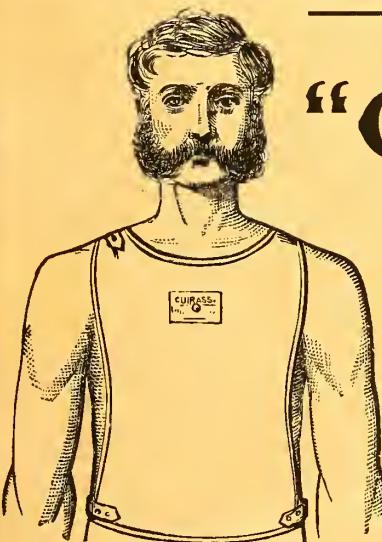
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SCARLET or WHITE FELT, per dozen.

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CHAMOIS LEATHER, lined with Flannel, per dozen.

GENTLEMEN'S, Single	10/6	12/6	14/6	17/-	23/-	—
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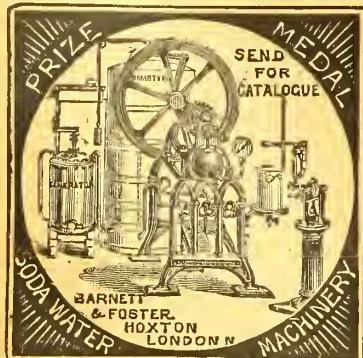
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OUR WEEKLY SUPPLEMENT.

We have prepared a set of forms for small advertisements (assistants wanted, businesses for disposal, exchange column, &c.). With these are attached tables of useful reference matter (Sale of Poisons, Postal Information, Annual Licences, Metric Weights, Measures, Medicine Stamps, Law and Public Offices, &c.). We shall be glad to send one of these sets to any subscriber who will send us an addressed postal wrapper (bearing a halfpenny stamp). As the object of this production is to encourage the insertion of such advertisements as we have named in THE CHEMIST AND DRUGGIST, we hope this offer will be taken advantage of chiefly by those subscribers who are willing to use this journal whenever opportunities occur.

OFFICES: 42 CANNON STREET, LONDON, E.C.